

<i>Issue Date</i>	<i>Org. Code</i>
3 - 3 - 9 2	W/OS032

NATIONAL WEATHER SERVICE

Engineering Handbook

<i>Program</i>	<i>Part</i>	<i>Section</i>
EHB-8	03	3.0

PART 3

SURFACE EQUIPMENT (EHB-8)

3. Equipment Modification Notes. Modification notes are the only documents serving to authorize the installation of modifications to instrumental equipment and systems. They provide the step-by-step installation instructions to be followed by authorized personnel in altering circuit and mechanical configurations of equipment. The purpose of any modification is either to enhance safety, maintainability, reliability, or incorporate a change necessitated by an operational requirement not previously designed into the equipment. Most modifications are the result of monitoring field reports relating to equipment failures and operational effectiveness. Other inputs result from suggestions submitted by electronics technicians and regional headquarters staffs. State-of-the-art changes are incorporated through NWS Office of Systems Operations Engineering personnel efforts to extend the useful life of equipment and to overcome logistics problems.

Copies of all modification instructions are provided to each electronics technician so he will have available the necessary information to perform the modification if equipment is encountered that has not previously been modified. The instructions are issued in numerical sequence by date and by equipment type. In this manner rapid verification by the technician will determine whether all modification notes have been received and incorporated into the equipment. Copies of missing modification notes should be requested through the regional headquarters from the NLSC.

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NATIONAL WEATHER SERVICE

Engineering Handbook

<i>Program</i>	<i>Part</i>	<i>Section</i>
EHB-8	03	3.1

MODIFICATION INDEX - CLOUD MEASURING EQUIPMENT

<u>Number</u>	<u>Date of Issue</u>	<u>Title</u>
21	March 7, 1969	Lamp and Lamp Holder Change in C-H -Ceiling Light Projector
26	December 14, 1970	Switch Assembly for Crouse-Hinds Ceiling Light Projectors
27	April 29, 1971	Lamp and Lamp Holder Change in the Westinghouse Ceiling Light Projector
28	January 31, 1972	Sloping Top and Timer for Crouse-Hinds Ceiling Light Projector
37	April 28, 1982	Radio Controlled Ceiling Light

Items 1-20, 22-25, 29-36, and 38 have been deleted.

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
WEATHER BUREAU
SILVER SPRING. MD. 20910

IN REPLY REFER TO:

Engineering Division

W514

CLOUD HEIGHT MEASUREMENT EQUIPMENT MODIFICATION NO. 21
(For Electronics Technicians)

SUBJECT : Lamp and Lamp Holder Change in Crouse-Hinds Ceiling Light
Projector

PURPOSE : To increase Light Intensity of Crouse-Hinds Ceiling Light
Projectors.

EQUIPMENT AFFECTED: All Crouse-Hinds Ceiling Lights

PARTS REQUIRED : 1 - Socket, Medium Bi-post, with supporting base, assembled
ready for installation

1- Adapter, K210-E319 - modified

1- Lamp, Iodine Vapor, 17-L-6-6

The initial procurement of the new lamp socket kit will be supplied by the Weather Bureau Headquarters and shipped direct to the stations affected. The station should be advised to order two spare lamps from the CLSC, Kansas City, Mo; on a Stores Requisition as follows:

17-L-6-6 - LAMP, 575T4Q/US 575-
watt, 105 volt, T-4 bulb, sc recessed
base, quartz envelope, clear

Parts removed by this modification should be retained for possible future use. If not recalled, discard as of January 1, 1970. Spare lamps should be carefully packed and returned to CLSC.

TIME REQUIRED : 4 Man-hours

GENERAL. --With an increased number of lights being encountered on expanding facilities at airports, it is becoming increasingly difficult at many locations to continue making ceiling measurements using a ceiling light projector. To enhance its operation, tests have shown that use of the iodine vapor lamp, as used in the Rotating-Beam Ceilometer, will

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increase the light output by 53%. This additional intensity will overcome many of the residual illumination problems now encountered.

As the lamp will be operating at a constant line voltage of 115 VAC rather than the alternate voltage of 75 and 105 volts encountered in RBC operation, life expectancy is anticipated to be only about 15 to 20 hours. Stations should therefore be cautioned not to operate the lamp over a period exceeding 3 minutes per observation. This will help conserve lamp life and minimize the intense heat generated by the lamp. At no time should the lamp be left on to keep the cover glass free from snow.

Completion of this modification should be reported in accordance with current instructions.

PROCEDURE. --

1. Turn off all power to the ceiling light projector.
2. Disconnect the 115-volt AC input line to the step down transformer.
3. Disconnect the low voltage leads (secondary) going from the transformer to the lamp socket. Remove transformer from mounting plate. Leave mounting plate in position.
4. Splice the 115-volt AC wires disconnected in step 2 to the two leads going to the lamp socket. Care should be taken to ensure that each splice is properly insulated.
5. Raise the door (cover) of the projector.
6. Remove the secondary mirror and support.
7. Remove lamp.
8. Disconnect leads and remove lamp socket from support plate. Do not move plate.
9. Remove the two nuts (indicated in Fig. 1), from the assembled medium bi-post socket assembly and install in place of the old socket.
10. Insert lamp adapter. This is the same adapter as used in the RBC Projector with the outer shield removed. NOTE: In case a new adapter is required, it should be ordered by stores requisition from the CLSC using Stock No. K210-E319. When received, dismantle and remove outer shield.
11. Install lamp (17-L-6-6).

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SECTION 3.1

SURFACE EQUIPMENT (3)

12. Turn on power and check that lamp operates. When it is determined that it is functioning properly, remove power and proceed to alignment steps.
13. To focus lamp, use an RBC focus device (K210-MS504) and install in place of lamp adapter.
14. Using the normal ceiling light projector adjustments, adjust the new medium bi-post socket for centering and focus.
 - (a) When centered, the images of the holes in the reflector and focusing device will coincide.
 - (b) Focusing is accomplished by moving lamp holder (socket) to give a sharp image of a distant object (clouds) on the frosted glass of the focusing device.
15. Remove focusing device and install adapter and iodine vapor lamp. Replace cover.
16. Place projector in operation.

INSTRUCTION MANUAL CHANGES. --None.

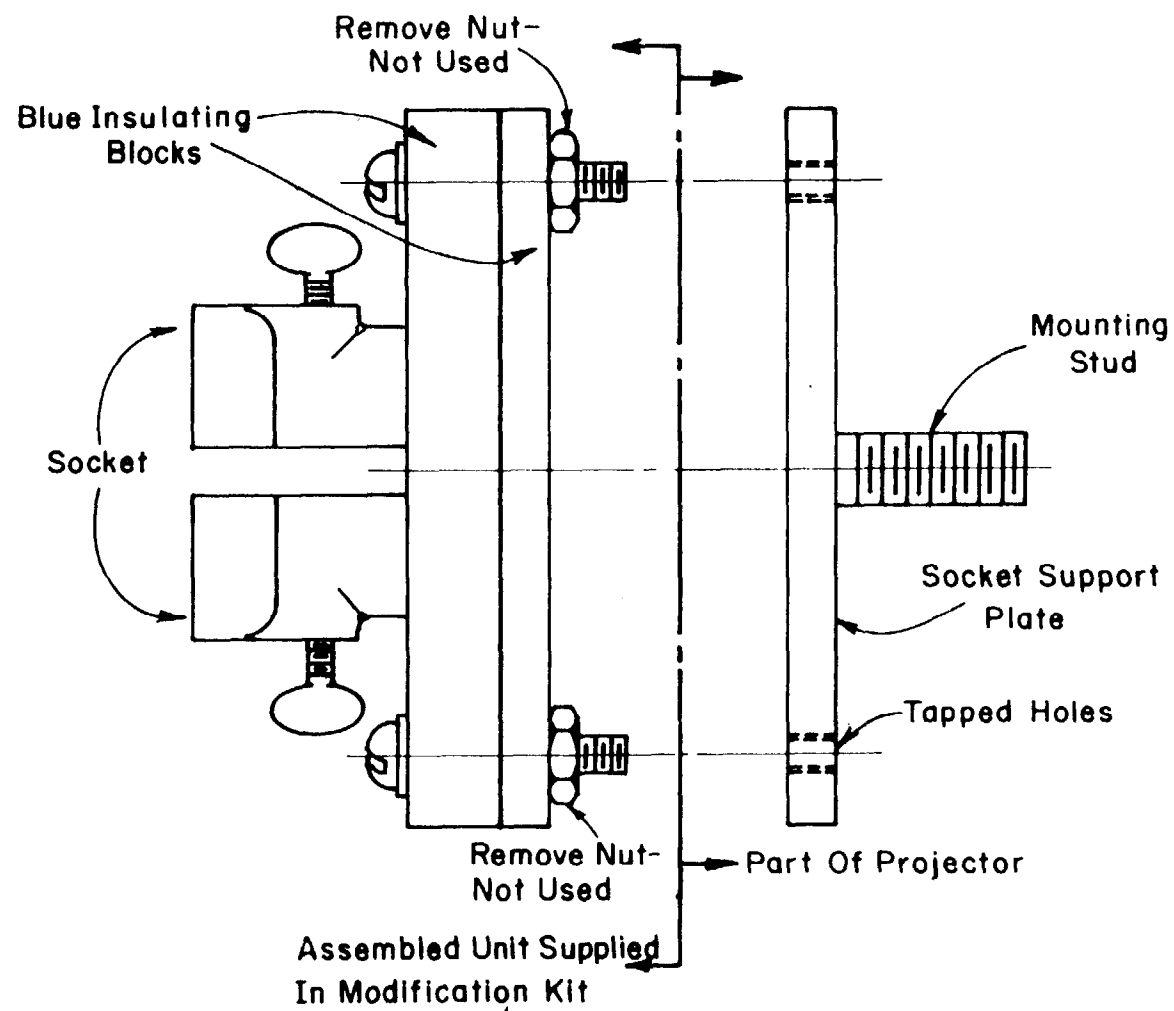


Fig.1:- Cloud Height Measurement Equipment, Mod. No.2.1.

U.S. DEPARTMENT OF COMMERCE
National Oceanic & Atmospheric Administration
National Weather Service
SILVER SPRING, MD. 20910

IN REPLY REFER TO:

Engineering Division

W514

CLOUD HEIGHT MEASUREMENT EQUIPMENT MODIFICATION NO.26
(For Electronics Technicians)

SUBJECT : Switch Assembly for Crouse-Hinds Ceiling Light Projectors

PURPOSE : To Protect Personnel When Changing Lamps in Ceiling
Light Projector

EQUIPMENT AFFECTED : Crouse-Hinds Ceiling Light Projectors Modified for Use
of RBC Halogen Lamps (Ref. Modification No. 21)

PARTS REQUIRED : 1 Switch, DPST, screw terminals with mounting hardware
1 Bracket, switch mounting
2 Screw, 6-32 x 1/2" long SS, each with a lock washer,
flat washer and nut
2 Wire, Teflon insulation with glass braid, lugged,
10 inches long

All parts (kit form) for this modification are to be ordered
on a Stores Requisition Form, forwarded to the Engineering
Division, attention W514, for action. Do not order other
items on the same Stores Requisition.

TIME REQUIRED : 2 Man-hours

General. -- In making Cloud Height Modification No. 21 it was found that in many cases the installation wiring of the system left one side of the Halogen lamp "hot": and it was possible to get a 110-volt shock while changing the lamp, even though the switch in the office is "OFF".

No hazard exists with the Crouse-Hinds units still using the 12-volt type lamp.

This modification places a DPST switch in the circuit, just before the lamp. If this switch is in the "OFF" position, there is no possibility of getting a shock while changing the lamp.

A small additional quantity of the Cloud Height Modification Kits No. 21 have been obtained. Each of these kits contain the DPST switch of this modification and should be installed in accordance with these instructions at the same time as Modification No. 21 is installed.

This modification should be made as soon as possible. Completion of the modification

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should be indicated in the Electronics Technician's Daily Report Form and any other reports required by Regional instructions.

PROCEDURE-- CAUTION: BE SURE THAT THE POWER TO THE CEILING LIGHT IS "OFF" AT THE OFFICE. ALSO, AT THE CEILING LIGHT DETERMINE THAT BOTH SIDES OF THE LINE ARE ZERO VOLTS TO GROUND. IF NOT, DISCONNECT CELLING LIGHT POWER BEFORE PROCEEDING WITH THIS MODIFICATION.

1. Remove the two 110-volt wires to the lamp socket.
2. Remove the two lugged wires from the kit and fasten the large lug end of each wire to the lamp socket.
3. Fasten the other end of each wire to a separate pole of the switch.
4. The switch should be so wired that the "ON" and "OFF" legend on the side of the switch will be to the center of the projector housing. This will permit the switch legend to be checked to indicate whether or not the lamp socket is "hot".
5. Move the switch away from the lamp socket along the inside of the ceiling light housing and locate a position for the mounting bracket. It should be at least 2-1/2 inches from the top edge of the housing, so as not to interfere with the cover frame when it is closed. The bracket is to be positioned so that the switch will be in the horizontal plane after installation.
6. Position the switch bracket and use it as a template. Drill two No. 27 holes. Install the bracket with the hardware provided.
7. Replace the large lugs on the two power wires (removed in Step 1) with small lugs or modify the large lugs to fit the switch terminals. Connect these wires to the remaining terminals of the DPST switch. It is necessary to modify the connectors or to use small lugs to fit the small screws of the switch.
8. Install the switch in its mounting bracket using the hardware provided.
9. Reactivate the ceiling light and check for proper operation.

MANUAL CHANGES:

None

U.S. DEPARTMENT OF COMMERCE
National Oceanic & Atmospheric Administration
National Weather Service
SILVER SPRING, MD. 20910

Engineering Division

IN REPLY REFER TO:
W514

CLOUD HEIGHT MEASUREMENT EQUIPMENT MODIFICATION NO. 27
(For Electronics Technicians)

SUBJECT : Lamp and Lamp Holder Change in the Westinghouse
Ceiling Light Projector

PURPOSE : To Increase Light Intensity of the Westinghouse Ceiling
Light Projector

EQUIPMENT AFFECTED : All Westinghouse Ceiling Lights

PARTS REQUIRED : 1 - Kit, consisting of the following items:

- 1 - Socket, Medium Bi-post, with supporting base and mounting brackets; assembled ready for installation
- 1 - Switch, DPST and mounting bracket with hardware
- 1 - Adapter, K210-E319, modified
- 1 - 6' Wire, size 16/2
- 2 - Lead, 12" long, lugged at each end
- 1 - Lamp, Iodine Vapor, 17-L-6-6
- 4 - Grommet, 1" O.D.
- 2 - Lug, ring tongue, size 6

The initial procurement of the new lamp socket kit will be supplied by the Weather Service Headquarters and shipped to the Regional Offices for distribution to the stations affected. If a kit is received at a station that does not have a Westinghouse Ceiling Light, the Regional Office should be advised in order to place the kit at some other station. The station should be advised to order two spare

lamps from the CLSC, Kansas City, Missouri on a Stores Requisition as follows:

FSN 6240-151-5255, (17-L-6-6) Lamp, 575T4Q/US
575-watt, 105 volt, T-4 bulb, sc recessed base, quartz envelope, clear.

Parts removed by this modification should be retained for possible future use. If not recalled, discard as of January 1, 1972. Spare lamps should be carefully packed and returned to the CLSC.

TIME REQUIRED : 4 Man-hours

GENERAL.--This modification is being performed on Westinghouse Ceiling Light Projectors to accomplish the effect previously described in Cloud Height Modification No. 21 under "General." Modification No. 21, item "General" should be read for familiarization before performing this modification.

The Westinghouse Ceiling Light Projector was manufactured with two different designs and with two different types of lamp mounting brackets.

One design, which we will call "A", has the projector drum connected directly to the transformer mounting case assembly. The other design, we will call "B", has the projector drum resting in a "U" support bracket with the transformer case bolted to the "U" bracket. The lamp mounting brackets are referred to as "Saddle" (Figure 4), and "Without Saddle" (Figure 3) type. The attached drawings show the differences and must be adhered to when performing this modification.

Completion of this modification should be indicated in the Electronics Technicians Daily Report Form 450-I 5, Block 21, and any other reports required by Regional Instructions.

PROCEDURE .--CAUTION: BE SURE TO TURN OFF AC POWER TO PROJECTOR
BEFORE PROCEEDING WITH THIS MODIFICATION.

1. Open the top of the projector and disconnect the wires at the base of the lamp.
2. Disassemble the lamp assembly, saving the parts necessary for reassembly according to the attached drawings.
3. The "Without Saddle" type lamp support bracket must be cut off as shown by the

drawing. The "Saddle" type does not require any cutting.

4. Remove the cover of the transformer housing and remove all the wires from the terminal board except the incoming power leads and the convenience outlet leads.
5. Be sure to push the transformer wires away from the terminal board so that there will be no danger of energizing the transformer. The wires may be cut off close to the transformer if desired.
6. Remove the compression connectors on the "B" type projector drum and the transformer case.
7. Cut the wires that connect the lamp to the transformer and remove them from the drum and transformer housing. These wires may be discarded.
8. Place the 6 ft. length of 16/2 wire in the place of the one removed in Step 7. Be sure to place the grommets and compression connectors over the wire before inserting the ends into the projector drum and transformer housing on the "B" type projector,
9. Connect the ends of the wire in the transformer housing to the terminal board at the terminals of the incoming ac power. (See Figures 1 or 2)
10. Place the cover on the transformer housing. Tighten the compression connector of the "B" type projector to prevent any strain on the wire leads within the transformer housing.
11. Before proceeding with any of the installation within the drum, it may be best to remove the mirror. This will prevent the possibility of dropping something on the mirror and breaking it. It will also be easier to put the wires through the holes in the drum and routing the wires to the switch and lamp assemblies.
12. Use the switch mounting bracket for a template and position it about 6" to the left or right of the lamp mounting bracket, and at least 2-1/2" below the top of the drum. This will allow the top to be closed without hitting the switch. Position the bracket so that the switch bat handle will be in the vertical plane. Use a drill size No. 27 and drill two holes for mounting the bracket. Secure the bracket to the drum.
13. Cut off the excess of the 16/2 wire that is inside of the projector drum. The "A" type projector requires about 2 ft. of cable and the "B" type projector requires about 6 ft.
14. Strip each lead of the 16/2 wire and place a size #6 ring tongue lug on each

lead. Connect each lead to separate terminals on the "OFF" side of the DPST toggle switch,

15. Connect one end of each of the 12" long lead to separate terminals on the "ON" side of the DPST toggle switch.
16. Mount the switch in the mounting bracket that was installed in Step 12. Be sure the "ON/OFF" plate is positioned so it can be easily seen when changing the lamp.
17. Assemble the lamp assembly and install as shown in the drawing. Connect the two leads from the ON/OFF switch to separate terminals on the medium bi -post base.
18. Install and level the mirror if it was removed in Step 11.
19. Install the RBC focusing device in the lamp bracket and adjust the assembly so that the mirror hole and the image of the hole on the focus device coincide. Use a small level to keep the focus device as level as possible.
20. With the projector pointed at a distant object, move the assembly in and out until a sharp image appears on the frosted lense of the focus device. Tighten screws and nuts after properly focused. Remove the focusing device and place the lamp and lamp socket in the bracket. Turn the power on and check for proper operation.

Attachments: 1 Each of Figures 1, 2, 3, and 4.

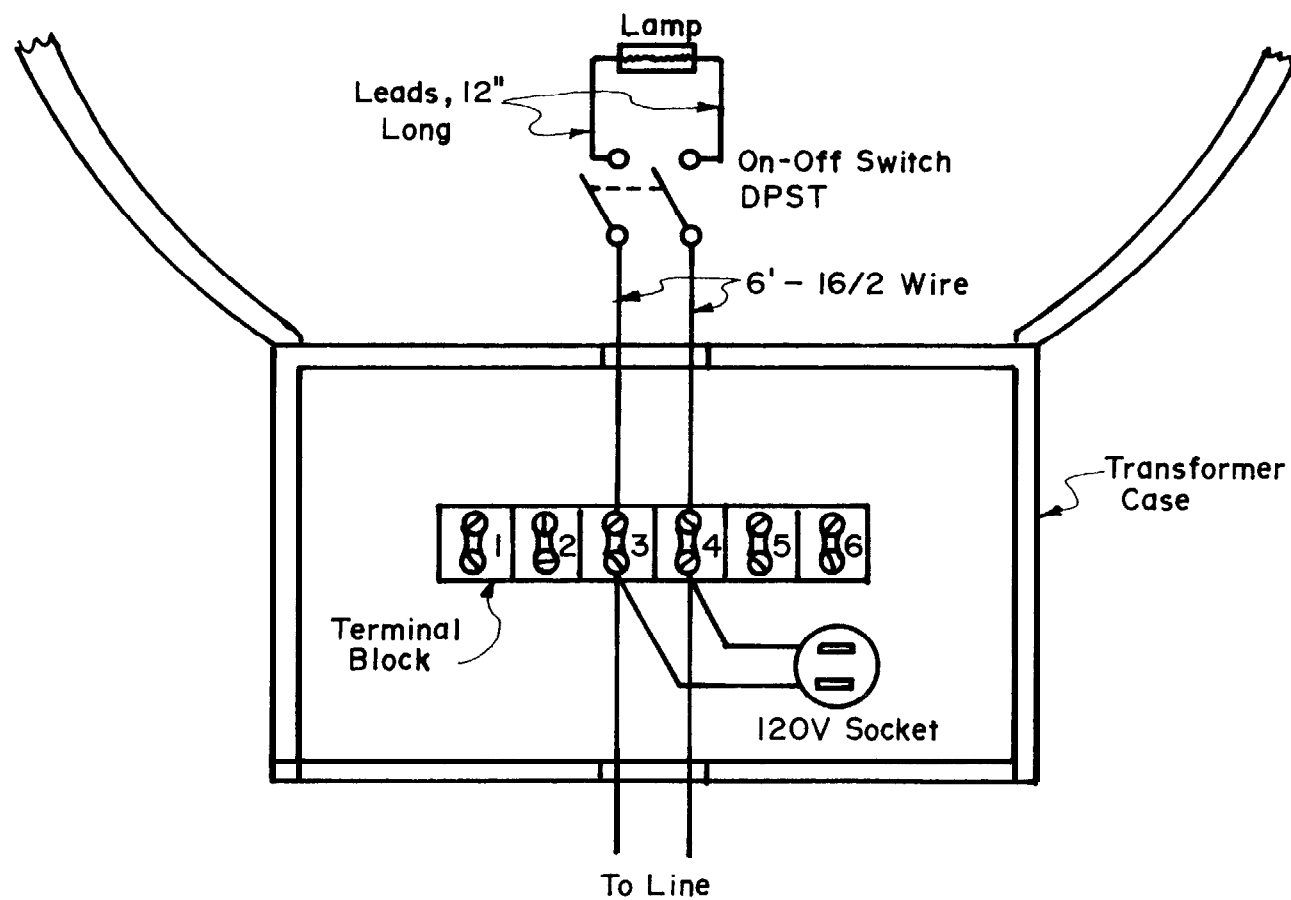
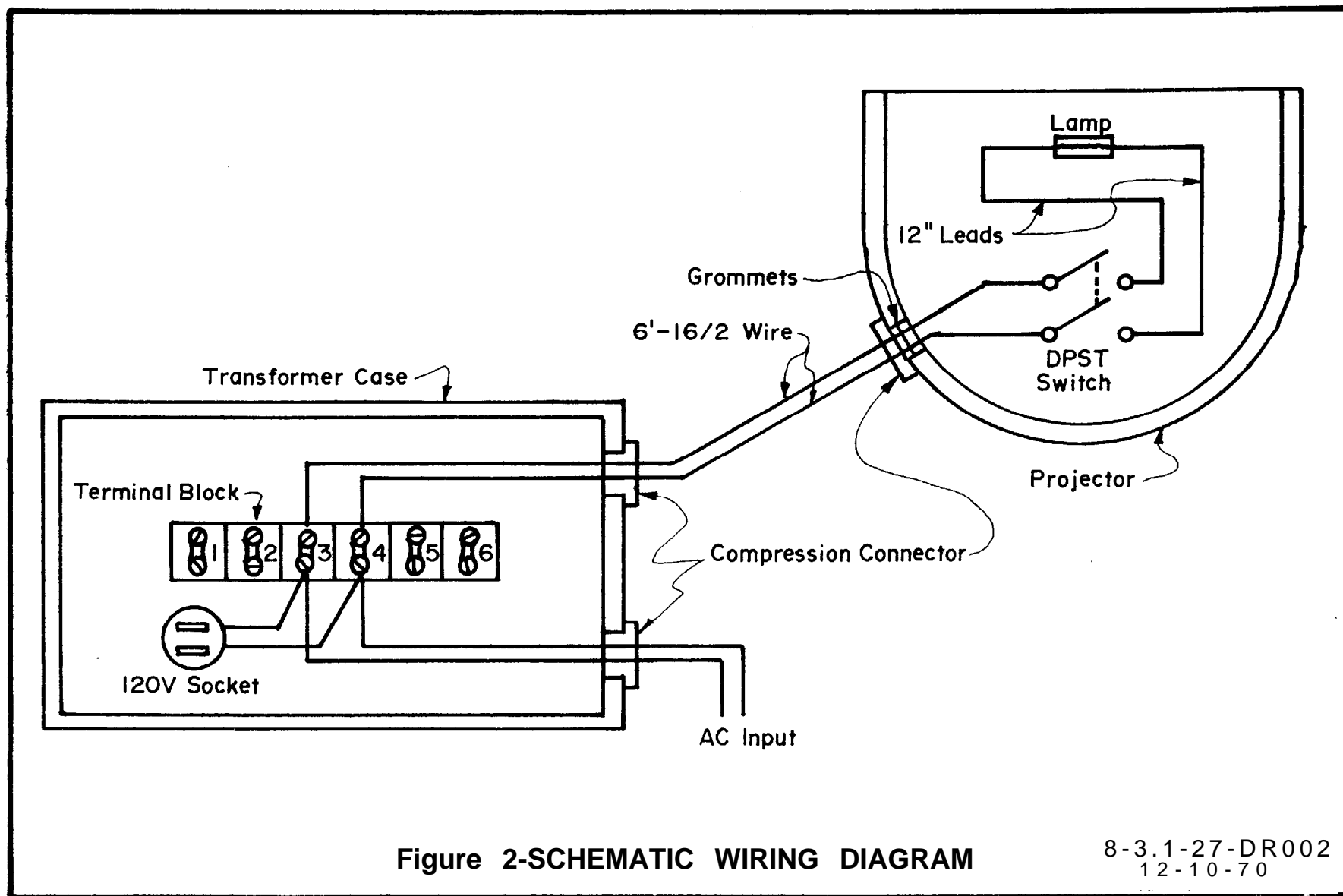


Figure 1 - SCHEMATIC WIRING DIAGRAM

8-3.1-27-DROO1
12-10-70



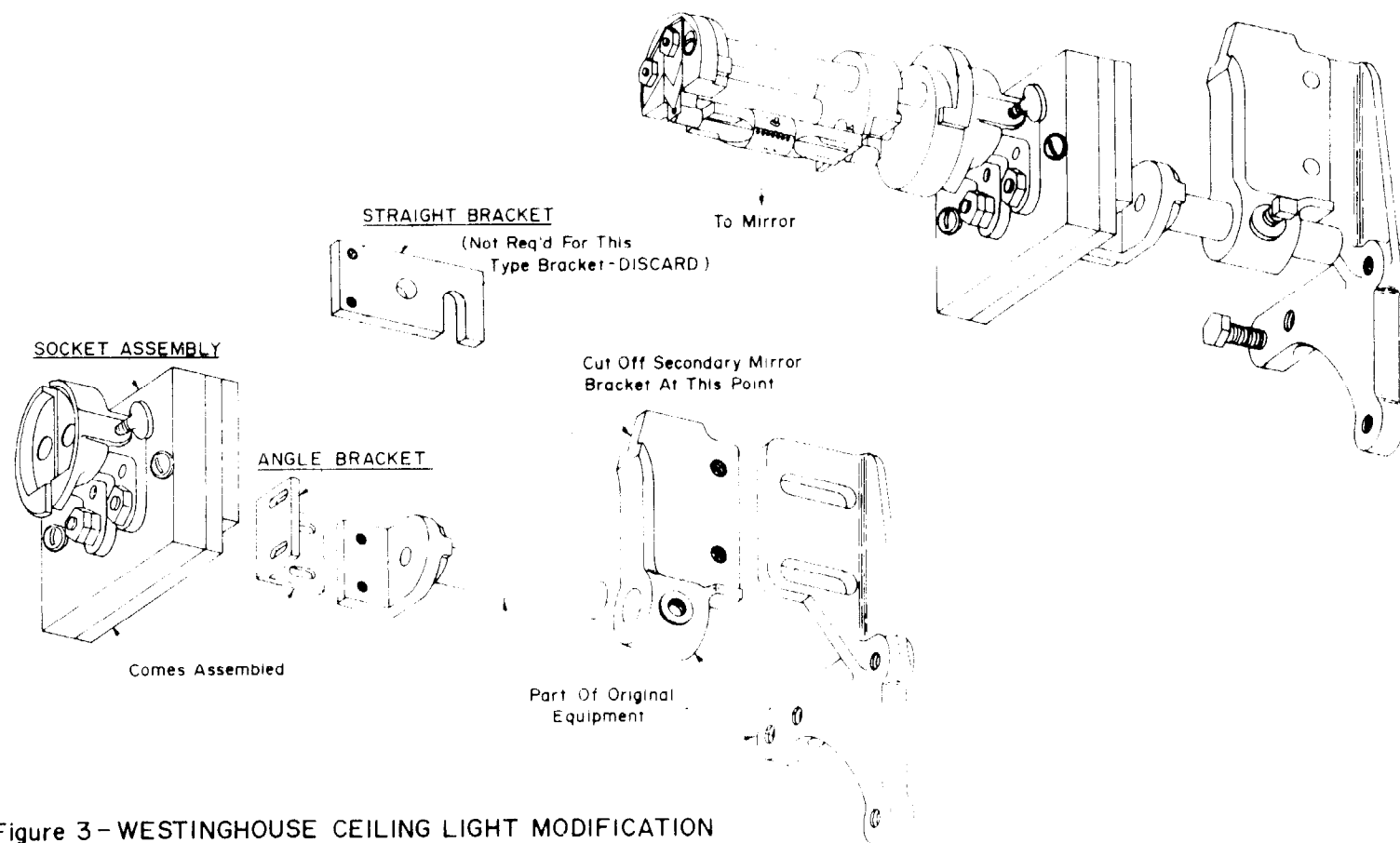


Figure 3 - WESTINGHOUSE CEILING LIGHT MODIFICATION
(WITHOUT SADDLE)

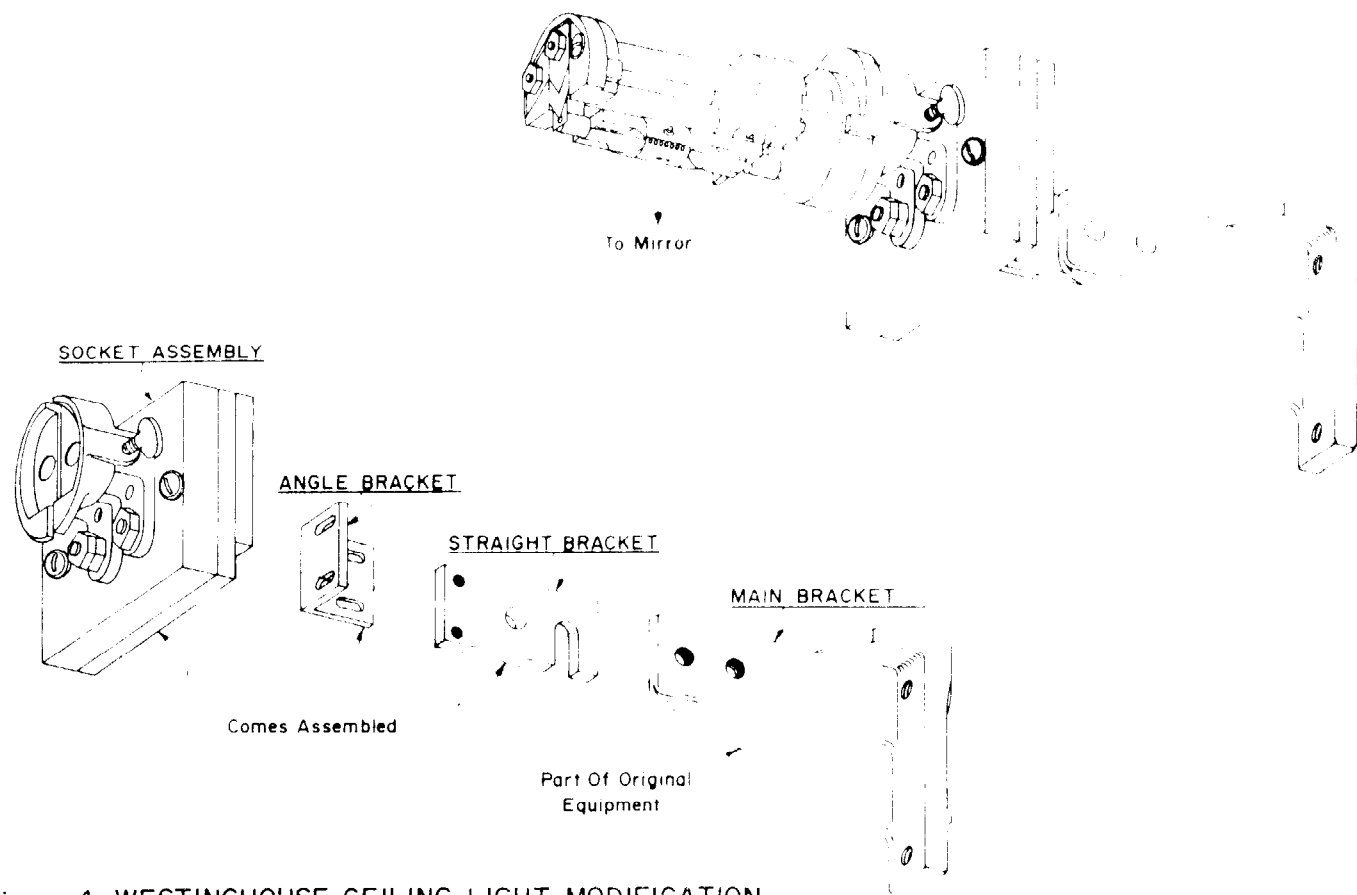


Figure 4- WESTINGHOUSE CEILING LIGHT MODIFICATION
(SADDLE TYPE)

CLOUD HEIGHT MEASUREMENT EQUIPMENT MODIFICATION No. 28
(For Electronics Technicians)

SUBJECT : Sloping Top and Timer for Crouse-Hinds Ceiling Light Projector

PURPOSE : To Improve the Operation of the Crouse-Hinds Ceiling Light Projector that has been modified for Use With the Halogen Lamp

EQUIPMENT AFFECTED : All Crouse-Hinds Ceiling Light Projectors

PARTS REQUIRED : 1 Kit, Consisting of the Following Items:

- 1 - #0600367 Sloping top assembly with heater, thermostat and wire leads installed
- 1 - #0600368 Mounting plate with timer, resistor and wire leads assembled
- 1 - #ML2820 Receptacle, 3-wire with grounding terminal
- 1 - #20U16-003 Terminal strip, 3 pole
- *2 - #20S04-001 Switch, toggle, DPST
- *2 - #20T52-001 Plate, indicating, "ON-OFF"
- 1 - #0600327 Bracket, mounting, switch; power
- 1 - #20S03-001 Switch, toggle, DPST momentary, normally closed
- 2 - #0600369-11 Wire lead "B", 7" long
- 2 - #0600369-12 Wire lead "C", 9" long
- 2 - #0600369-13 Wire lead "D", 27" long
- 2 - #0600369-17 Wire lead "H", 7" long
- 1 - #0600369-18 Wire lead "J", 4" long
- 3 - #20Y01-001 Lug, solderless

* One each provided with Modification No. 26

- 2 - #6-32 x 7/8" Screw, binding head, SST
- 2 - #8-32 x 5/8" Screw, binding head, SST
- 4 - #6-32 Nut, Hex, SST
- 2 - #8-32 Nut, Hex, SST
- 4 - #6 Washer, lock, int. ext. tooth, type A, SST
- 2 - #8 Washer, lock, int. ext. tooth, type A, SST
- 4 - #6 Washer, flat, SST
- 2 - #8 Washer, flat, SST
- 4 - #6 Washer, nylon
- 2 - #8 Washer, nylon
- 1 - #0600377-1 Template (back)
- 1 - #0600377-2 (left side)
- * 1 - #0600433 Bracket, lamp switch, mounting

* One each provided with Modification No. 26

TIME REQUIRED: 4 Man-hours

GENERAL.--This modification is to improve the operation of the Crouse-Hinds Ceiling Light Projectors that have been modified for using the Halogen Lamp. The kit includes a sloping top with an inside mounted, thermostatically controlled heater to prevent the accumulation of snow, ice, or condensation on the projector top. A timer is included to control the operation of the ceiling light projector lamp. The timer is controlled by interrupting the power to the projector with a momentary switch that is located in the observation room. This will help conserve lamp life and minimize the intense heat generated by the lamp. At no time should the lamp be left on to help keep the cover glass free of ice or snow.

All modification kits must be ordered through the Regional Headquarters, since each Region will determine which stations will be modified.

The new Manual, Crouse-Hinds Instruction Book A-242B, supersedes the A-242A Manual which should be discarded.

Completion of this modification should be indicated in the Electronics Technician's Daily Report Form 450-15, Block 21, and any other reports required by Regional Instructions.

PROCEDURE: CAUTION: BE SURE TO TURN OFF AC POWER BEFORE
PROCEEDING WITH THIS MODIFICATION

The mirror may be removed from the drum to facilitate routing the wires from the lower housing into the drum.

1. Remove the cover plate from the lower housing.
2. Disconnect the two leads going to the lamp socket from the incoming ac source.
3. Disconnect the ac input line from the convenience receptacle.
4. Remove the top cover by removing the hinge pin and loosening the four clamps,
5. Disconnect the two leads from the lamp holder socket.
6. Remove the transformer mounting plate.
7. Place the large drilling template (with the printing facing out), on the back side of the lower housing. Drill the four holes using a 3/16" drill bit.
8. Place the small drilling template (with the printing facing out), on the left side (when facing door) of the lower housing. Drill the two holes using a 3/16" drill bit.
9. Attach terminal barrier strip (20U16-003) to the inside back wall of the lower housing with the two #6-32 x 1" binding head screws, two #6-32 hex nuts, two #6 nylon washers two #6 flat washers, and two #6 locking-type washers. The washers are to be assembled on the outside of the housing.
10. Connect two "B" leads to the outlet receptacle and mount the receptacle to the back wall of the lower housing with two #6-32 x 7/8" binding head screws, two #6-32 nylon washers, two #6-32 flat washers, and two #6-32 hex nuts.
11. Mount the switch mounting bracket (#0600327) to the side wall with two #8-32 x 5/8" binding head screws, two #8-32 nylon washers, two #8-32 flat washers, two #8-32 lock washers, and two #8-32 hex nuts.
12. Install the mounting plate with timer and resistor (0600368) in the lower housing with the resistor toward the back of the housing.
13. Attach the sloping top to the drum and replace the hinge pin.

14. Connect the small lugged ends of the two "H" leads to the "OFF" side of the DPST toggle switch (#20S04-001).
15. Connect one "D" lead to a terminal on the "ON" side of the DPST toggleswitch (#20S04-001).
16. Connect one end of the "D" lead to the right side of the resistor that *is* mounted on the timer as you look into the housing.
17. Connect one end of each of the two "C" leads to separate terminals on the "ON" side of the DPST toggle switch (#20S04-001).
18. Connect one end of the "J" lead to the center terminal of the barrier strip. Ground the other end at any convenient ground.
19. Connect the two "B" leads from the receptacle to separate terminals on the barrier strip* Terminals are numbered 1, 2, and 3 for these instructions.
20. Connect the two "C" leads from the DPST toggle switch to terminals 1 and 2 of the timer panel.
21. Connect the two "H" leads from the DPST toggle switch to separate terminals of the barrier strip,,
22. Disconnect the two wires from the "OFF" side of the DPST switch located in the drum. (This switch was installed in Modification #26.) Disconnect the other end of the wires at the splice in the lower housing, (This was done in Modification #21.) Discard the wires.
23. Route the two "D" leads through the hole in the base of the drum up to the switch and connect the ends to separate terminals on the "OFF" side of the switch.
24. Fasten the solderless lugs (#20Y01-001) to the incoming ac power leads,
25. Connect the lugs to separate terminals on the barrier strip. Make sure the ground lug of a three-conductor cable is connected to the center terminal, With two-conductor cable, connect the leads to terminals 1 and 3.
26. Route leads "E" and "F" that are in the top cover, down through the hole in the drum to the lower housing. Connect the "E" lead to the same pole of the DPST switch that leads "C" and "D" are connected, Connect the "F" lead to the

pole that lead "C" only is connected.

27. Mount the switch (in the lower housing) to the bracket that was installed in Step 11.
28. If the mirror has been removed from the drum in order to perform this modification, it should now be put back in and checked for leveling. Check for focus and alignment. After all alignment is satisfactory, place the lamp into the lamp holder and set the thermostat for the desired setting. Place the "OFF/ON" switch to the "ON" position and close the top of the projector. Secure it for weatherproof operation.
29. Make sure all connections are made in the lower housing, switches are in the correct position, and timer is set to 3 minutes. Place the cover on the housing and secure for weatherproof operation.
30. The momentary DPST toggle switch must be placed in the ac power line that feeds the ceiling light projector. This must be at a convenient location for the observer. No attempt will be made in this modification as to wiring this switch, since all that is required is for it to be in series with the line so by throwing the switch, the power is momentarily interrupted.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

April 28, 1982

0A/W5141 - JM

TO: All NWS Regional Headquarters, Area Electronics Supervisors,
and Electronics Technicians (EHB-8 Distribution)

FROM: 0A/W51 - J.M. St. Clair *J.M. St. Clair*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8,
Issuance 82- 6

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 3.1;
Cloud Height Measurement Equipment Modification No. 37: Radio
Controlled Ceiling Light.

2. Summary:

The Radio Controlled Ceiling Light will be used where there are
cable restrictions.

3. Effect on Other Instructions:

None.

4. Reporting Equipment Modifications:

Target date for reporting completion of this modification is
May 30, 1982.

All completed modifications shall be reported on the H-28
Engineering Progress Report Form, in accordance with EHB-4,
Part 2.

5. Certification Statement:

This modification has been successfully field tested for system
operational integrity.

EHB-8
Issuance 82-6



Engineering Division
OA/W514

CLOUD HEIGHT MEASUREMENT MODIFICATION No. 37
(For Electronics Technicians)

SUBJECT : Radio Controlled Ceiling Light.

PURPOSE : To achieve Remote Ceiling Light Operation of up to one mile where location prohibits cable.

EQUIPMENT AFFECTED : Selected Ceiling Light Sites.

PARTS REQUIRED :

- 1 ea. Mounting Plate, 7" x 13-1/2"
- 2 ea. Mounting Clamp (U Bolt)
- 1 ea. T-Box, w/insert plugs
- 1 ea. T-Box Cover, Blank
- 2 ea. Connector, Crouse-Hinds
- 2 ea. 10/32" x 1/2" B.H. Screw
- 2 ea. No. 10 Plain Washer
- 2 ea. No. 10 Lock Washer
- 4 ea. No. 1/4 Plain Washer
- 4 ea. No. 1/4 Lock Washer
- 4 ea. No. 1/4 x 20" Hex Nut
- 1 ea. Remote Radio Switch
- 1 ea. Motorola Transmitter HT-220
- 1 ea. Radio Antenna
- 1 ea. Mercury Battery
- 3 ea. Terminal Lugs
- 4 ea. Wire Nuts
- 6 ft. Rubber covered 14/3 Cable

TOOLS REQUIRED : Standard Complement

TIME REQUIRED : 2 Hours

MOD PROCUREMENT : This modification will be provided to selected stations. No further action is necessary.

General: -- This modification will enable the user to relocate the ceiling light up to a distance of one mile from the portable transmitter. Normal consideration of runway and lights should be observed. All that is needed is a reliable 105-130VAC power source. The portable battery operated transmitter triggers the Radio Controlled Switch (RCS) located at the ceiling light. The RCS then activates the ceiling light timer, which remains on for approximately 3 minutes and turns itself off automatically.

PROCEDURE: Check mod kit contents for completeness. This modification is divided into two parts (A and B). Part A is performed in the shop and Part B at the ceiling light. Before proceeding with this modification, check ceiling light for proper operation. NOTE: Ceiling Light Mod No. 28 must be installed or this modification will not work.

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4-28-82

Part A:

1. Radio Controlled Switch (RCS): Cut the red, blue, and black wires to a length of 5 inches. Strip 3/4" from the end of each wire.
2. Remove T-Box and the insert plug from carton. Plug bottom hole of T-Box with slotted insert plug.
3. Find the T-Box mounting clamp and insert into small hole at bottom front center of box (located between the two large holes). NOTE: Do not install connectors at this time.
4. Attach the T-Box to the Radio Controlled Switch referencing Drawing No. CM-10040. NOTE: Be careful not to strip the plastic threads of the RCS when screwing on the T-Box. It may not be necessary to screw in all the way to attain a good fit.
5. Place the RCS and T-Box on the mounting plate. Flip the mounting tab on the RCS and see that the mounting holes line up. Insert a 10/32 screw and a No. 10 split lock washer into the RCS mounting tab and partially screw into mounting hole.
6. Place two No. 10 flat washers under the T-Box mounting tab and over the T-Box mounting hole on the plate. Mount the T-Box using a No. 10 split washer and 10/32 B.H. screw. Now tighten the screw on the Radio Controlled Switch Tab.
7. Install the two Crouse-Hinds CG295 connectors in the remaining two holes of the T-Box. (Use the diagram supplied by Crouse-Hinds and assemble connector parts without the cable.)
8. Temporarily mount the T-Box Cover using the gasket and screws supplied.
9. Insert the large U-Clamps on the underside of plate and temporarily place the flat washers, split washers and nuts on the U-Clamp. The unit is now ready to be taken to the site.

Part B:

1. Remove AC Power to Ceiling Light site.
2. Mount the Radio Control Unit on the Ceiling Light support post with the T-Box at bottom.
3. Open both the ceiling light bottom and T-Box covers.
4. Note the color code and remove the AC Power cable from the ceiling light bottom.
5. Strip 3/4" from the ends of cable wires and insert the cable into one of the Crouse-Hinds connectors at bottom of the T-Box.

6. Strip both ends of the 6 ft. cable provided and insert one end into the ceiling light bottom. Attach the terminal lugs to the wires and hook up to terminal as noted in Step 4.
7. Insert the other end of the 6 ft. cable into the remaining Crouse-Hinds connector.
8. Connect the wires in the T-Box per drawing using the wire nuts.
9. Remove the cover from the Radio Controlled Switch. Locate the vibrasponder and make sure that it is secure in its socket near the base of the PCB.
10. Align the PCB with the tracks of the RCS cover. Carefully close the cover until it clicks. With the large key in the large slot, rotate the cover CCW. Replace the screw in cover.
11. Check your work in T-Box and Ceiling Light. Replace gasket and covers in both boxes.
12. Turn on power.
13. Screw antenna into transmitter and insert the battery. Close battery compartment. Press button on top of transmitter and ceiling light should turn on, time out, and turn off.
14. If there are any problems call Jerry Mintz, FTS 427-7836.

Attachments: 1 ea. Wiring Schematic
1 ea. DWG. No. CM-10040
1 ea. Copy of April 16, 1982 Memorandum: Remote Ceiling
Light Switches
1 ea. Form H-28



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

April 16, 1982

0A/W521x1/JLL

TO: 0A/W5141 - Jerome Mintz
FROM: 0A/W521x1 - James L. Lehmann *Jim Lehmann*
SUBJECT: Remote Ceiling Light Switches
REF: My memorandum, dated 3/18/82, same subject
ACTION: Notify when systems are sent

Here is the latest list of sites to receive the Remote Ceiling Light Switch systems:

- | | |
|--------------------------------------|------------------------------------|
| 1. Lincoln, NE, Central Region | 8. Newark, NJ, Eastern Region |
| 2. San Francisco, CA, Western Region | 9. LaGuardia, NY, Eastern Region |
| 3. Fargo, ND, Central Region | 10. Charleston, SC, Eastern Region |
| 4. Los Angeles, CA, Western Region | 11. Key West, FL, Southern Region |
| 5. Casper, WY, Central Region | 12. Albany, GA, Southern Region |
| 6. Seattle, WA, Western Region | 13. Orlando, FL, Southern Region |
| 7. Moline, IL, Central Region | 14. Unalakleet, AK, Alaska Region |

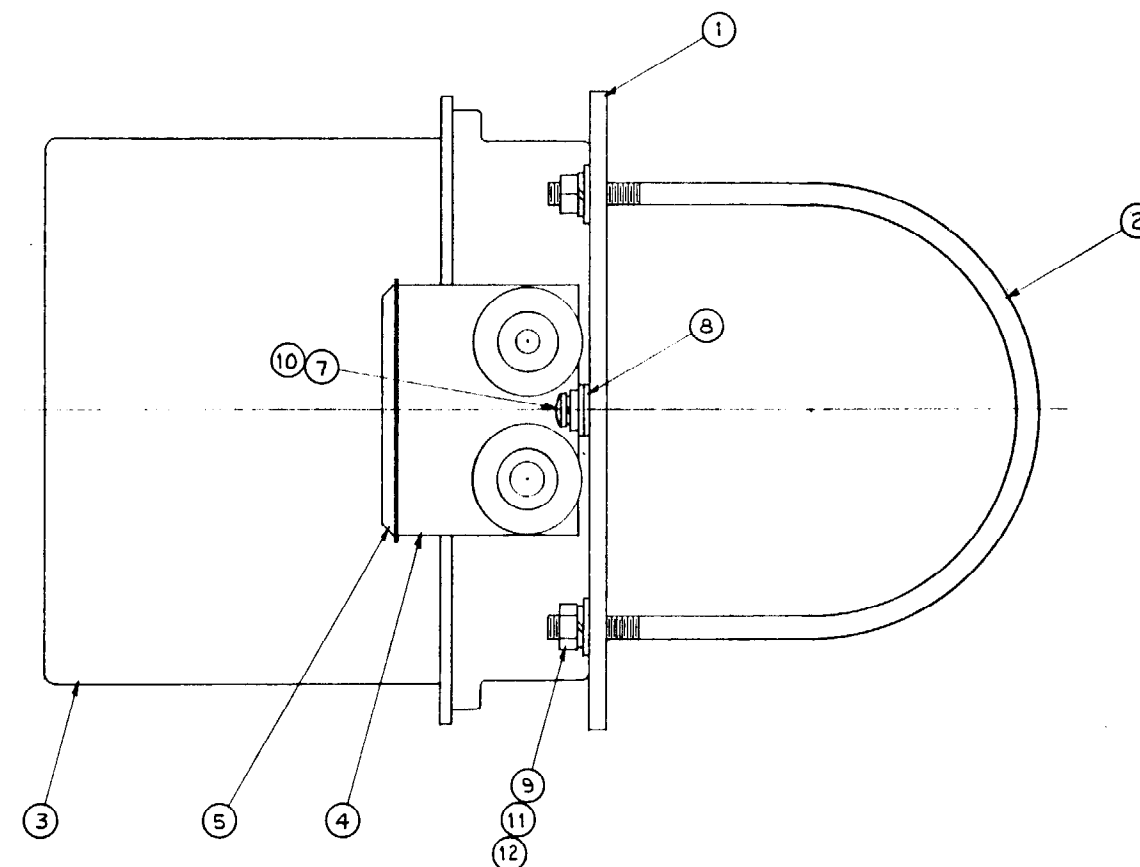
Delivery should be made to the Regional Engineering Divisions except for the Alaskan system, which should be sent to DATAC.

Please let me know when the systems are sent to the regions.

Thanks.

cc:
Chiefs, DATAC, All NWS Regions





LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES: $\pm .05$
 3 PLACE DECIMALS $\pm .005$
 2 PLACE DECIMALS $\pm .02$

EQUIPMENT DEVELOPMENT
 LABORATORY
 SILVER SPRING, MD. 20910

DATE 9-5-78

PREPARED COMPTON

CHECKED

DESIGN

APPROVED BY

APPROVED BY

U.S. DEPARTMENT OF COMMERCE
 NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
 NATIONAL WEATHER SERVICE

CEILING LIGHT
 RADIO CONTROL MOUNT
 ASSEMBLY

SIZE

D

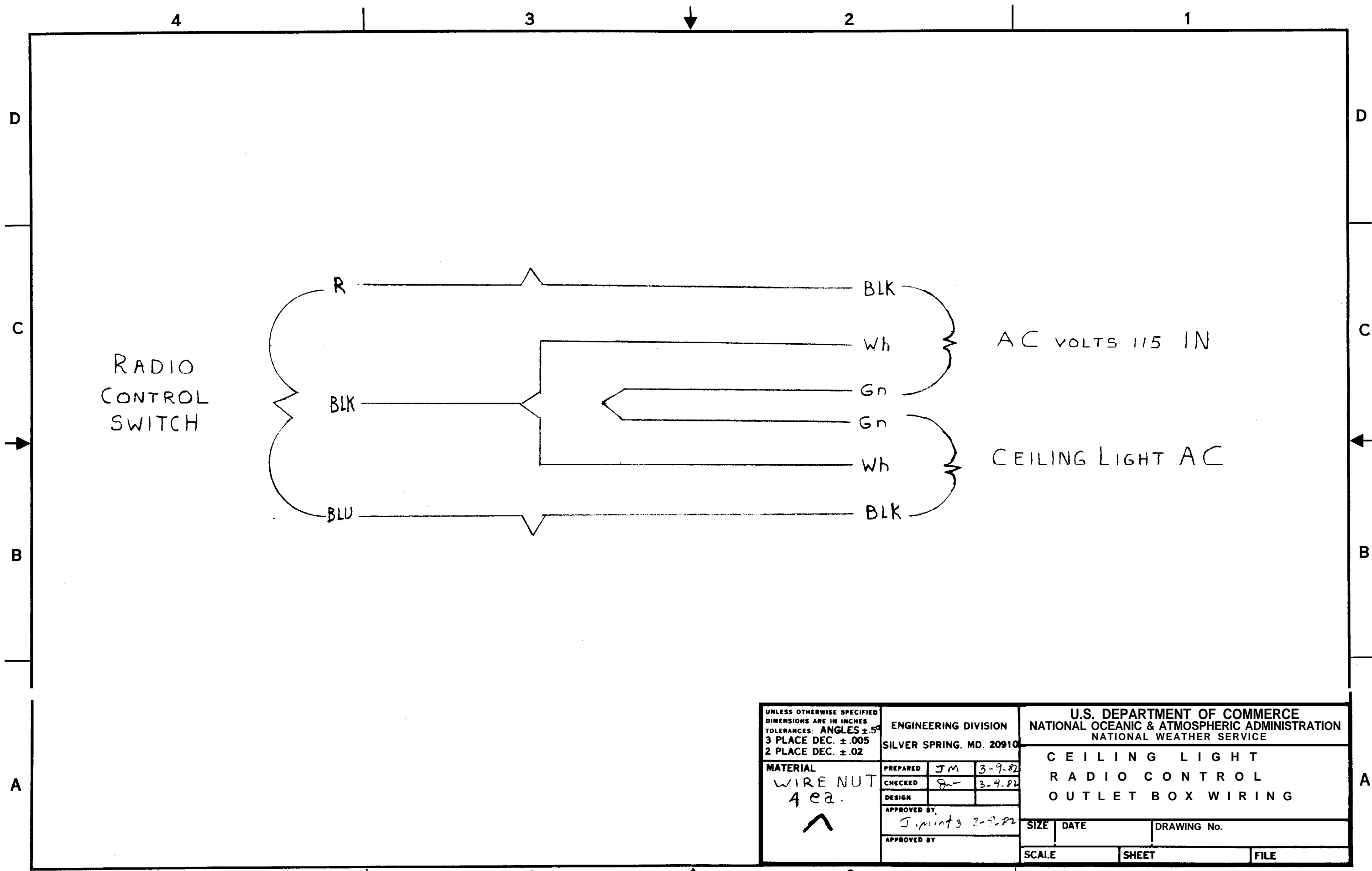
DRAWING NO.

C M - 1 0 0 4 0

SCALE 1 - 1

SHEET 1 OF 1

FILE 23-5D



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: ANGLES $\pm 5^\circ$ 3 PLACE DEC. $\pm .005$ 2 PLACE DEC. $\pm .02$	ENGINEERING DIVISION		U.S. DEPARTMENT OF COMMERCE			
	SILVER SPRING, MD. 20910		NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION			
			NATIONAL WEATHER SERVICE			
MATERIAL	PREPARED	JM	3-9-82	CEILING LIGHT RADIO CONTROL OUTLET BOX WIRING		
WIRE NUT	CHECKED	jm	3-9-82			
4 ea.	DESIGN					
^	APPROVED BY	J. McInt 3-9-82		SIZE	DATE	DRAWING No.
	APPROVED BY			SCALE	SHEET	FILE

<i>Issue Date</i>	<i>Org. Code</i>
3-3-92	W/OS032

NATIONAL WEATHER SERVICE

Engineering Handbook

<i>Program</i>	<i>Part</i>	<i>Section</i>
EHB-8	03	3.2

MODIFICATION INDEX - WIND EQUIPMENT

<u>Number</u>	<u>Date of Issue</u>	<u>Title</u>
1a	September 8, 1976	Modification of F611 Retransmitter Self Check
3	July 25, 1979	DARDC Wind Retrofit
	June 11, 1980	Modification No. 3, Errata No. 1
	July 29, 1986	Modification No. 3, Errata No. 2

Items 1 and 2 have been deleted.



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

Date : September 8, 1976

Reply to Attn. of: W514

To All Regional Headquarters, Electronic Program Officers, and Electronics Technicians

From J.M. St.Clair
Chief, Engineering Division

Subject: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 76- 8

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 3.2; F420A Wind Modification No. 1 a, for F611 Retransmitter Self-Check.

2. Summary:

Modification No. 1a is a revision of F420C Wind Modification No. 1. It provides the electronics technicians with a step-by-step instruction for modifying the F611 Wind Retransmitter Direction self-checking feature.

3. Effect on Other Instructions:

1. Replace F420C Wind Modification No. 1 with F420A Wind Modification No. 1a in EHB-8, Section 3.2.
2. Replace Parts List for the F611 Solid State Wind Retransmitter, Instruction Manual No. 8-213.
3. Replacement for Figure 3 - F611 Wind Retransmitter Schematic, instruction Manual No. 8-213.
4. Replacement for Page 3, F611 Wind Retransmitter Instruction Manual No. 8-213.



EHB-8
Issuance 76-8

F420A WIND MODIFICATION No. 1A
(For Electronics Technicians)

SUBJECT : Modification to F611 Retransmitter Self-Check

PURPOSE : To Increase the Sensitivity of the Self-Check Feature of the F611 Retransmitter

EQUIPMENT AFFECTED : All F611 Retransmitters used in F420A Systems

PARTS PROVIDED : 20" - Hook-up Wire
3 - Resistors, 1/2W, Carbon, Ohmite, 10%,
3.9K ohms, 680 ohms, 150 ohms
1 - Stand-off Terminal
1 - Engraved Nomenclature Plate

GENERAL : This modification is in four parts and will involve changing the voltage divider of PS2, wiring on direction switch, S3, the 0°, 120°, and 240° nomenclature on the front panel, and the location of resistor, R2. After installation of this modification the Wind Speed reading will be in the vicinity of 47 knots, dependent on the values of R3, R11, and R4.

The value of the speed in knots can be determined by the formula:

$$\text{Speed (knots)} = \frac{15 (R4)}{R3+R4+R11 (.04605)}$$

Theoretically, the voltage at the junction of R11 and R4 should be 2.156V.

PROCEDURE : Remove the F611 Wind Retransmitter from the equipment rack and place it on a workbench upside down.

EHB-8
Issuance 76- 8

1. On the underside of the chassis, remove the four screws holding the printed circuit board and position it so that it is accessible for the pending modification.
2. With the appropriate hand tools, remove the BROWN wire which connects to R2 and solder it (along with the WHITE wire) to Terminal C on TB-1.
3. Carefully remove the present Resistors R2, R3, R4, and the WHITE/RED wire from the printed circuit board. Save R2 for later use in this modification. These resistors may be located by viewing Figure 2, View A.
4. Solder the WHITE/RED wire to the land area from which the BROWN wire was removed at R2 in Step 2. (See Figure 2, Views A and B for precise locations.)
5. After removal of the resistors, locate the triple land area junction points of C3 (the WHITE wire which goes to Terminal C on TB-1) and the land area from which R2 was removed. This is the top triple land area on the right side of the printed circuit board as seen in Figure 2, View A.
6. Using an EXACTO-type knife, carefully cut through the land area portion from which the lead from R2 was removed. This is the right-hand portion of the triple land area. Make certain the cut is completely through the land area.
7. Remove the right-hand portion of the land area, which has been cut, by carefully scraping it off the printed circuit board with the EXACTO knife. Make certain enough of that land area has been removed so the resistor lead to be installed through the hole will not make contact with the remaining land area.
8. Install the resistors contained in the modification kit as shown in Figure 2, View B. Insert one lead of R3 through the hole left vacant due to the WHITE/RED wire being removed in Step 3. Make certain the R3 lead is long enough to reach through the hole.
9. Connect a piece of hook-up wire to the top side of the printed circuit board at the junction of R3 and R11. Leave the wire long. It will be used later on at switch S3.
10. Replace printed circuit board in retransmitter and secure it with the four screws to the chassis.
11. Remove knob and nut that secures direction switch S. Position switch so the inner three terminals can be viewed. Refer to Figure 4, View A, and Figure 5 to locate the switch sections A, B, and C.

12. Unsolder the ORANGE, BLACK, AND WHITE/BLACK wires from switch S3.
13. Unsolder and remove the BLACK strap wires from around switch. Refer to Figure 4, View A.
14. Rewire switch S3 with new strap wires as shown in Figure 4, View B. Be sure to insulate these new strap wires with sleeving (spaghetti).
15. Resolder the ORANGE and BLACK wires that were disconnected in Step 12, as shown in Figure 4, View B.
16. Route the hook-up wire that was attached to the junction of R3 and R11, in Step 9, along the wire bundle. Solder it to switch S3 as shown in Figure 4, View B.
17. Solder one lead of resistor R2 (the 5K resistor saved from Step 3) to the C terminal on switch S3. Refer to Figure 5. If the lead is too short, pigtail it.
18. Remount the direction switch, S3, secure it with the nut, and replace the knob.
19. Install the Stand-off terminal on P2 at the end near switch S3. Refer to Figure 5. The stand-off terminal lug may have to be bent slightly to allow the lead of R2 to reach the lug.
20. Solder the remaining lead of R2 and the WHITE/BLACK wire removed in Step 12 to the stand-off terminal lug (see Figure 5).
21. Position the Retransmitter so that the front panel may be viewed.
22. Turn 'DIRECTION. Switch to the OFF position.
23. Peel the backing from the NOMENCLATURE PLATE, position it so that the arrowhead on knob aligns with OFF position on the NOMENCLATURE PLATE, Secure the NOMENCLATURE PLATE to the Retransmitter by pressing it firmly at all points.
24. This completes the modification.

The attached "Modification Completion Report" will be prepared in duplicate and routed to the NWS Headquarters, Engineering Division (W511) through the appropriate Regional Headquarters, as indicated on the report form.

Attachments: 2 Each of Modification Completion Report

1 Each of Figures - 1	1 Each of Figures - 4
2	5
3	
1 Each, Page 3 Calibration	
1 Each of DR001/B Schematic	1 Each of DR004/A

MODIFICATION COMPLETION REPORT

MODIFICATION TITLE _____

MODIFICATION NO. _____ EQUIPMENT CODE _____ SERIAL NO. _____

STATION NAME _____ STATION NO. _____ REG. _____ AREA _____

DATE COMPLETED (YYMMDD) _____ TIME TO COMPLETE (WHOLE HOURS) _____

TECHNICIAN PERFORMING MODIFICATION:

(Signature)

ROUTING:

INITIALS DATE

1. AES	_____	_____
2. REGIONAL ENGINEERING	_____	
3. NWS ENGINEERING DIVISION (W511)	_____	

REMARKS (PROBLEMS ENCOUNTERED OR OTHER PERTINENT INFORMATION):

MODIFICATION COMPLETION REPORT

MODIFICATION TITLE _____

MODIFICATION NO. _____ EQUIPMENT CODE _____ SERIAL NO. _____

STATION NAME _____ STATION NO. _____ REG. _____ AREA _____

DATE COMPLETED (YYMMDD) _____ TIME TO COMPLETE (WHOLE HOURS) _____

TECHNICIAN PERFORMING MODIFICATION:

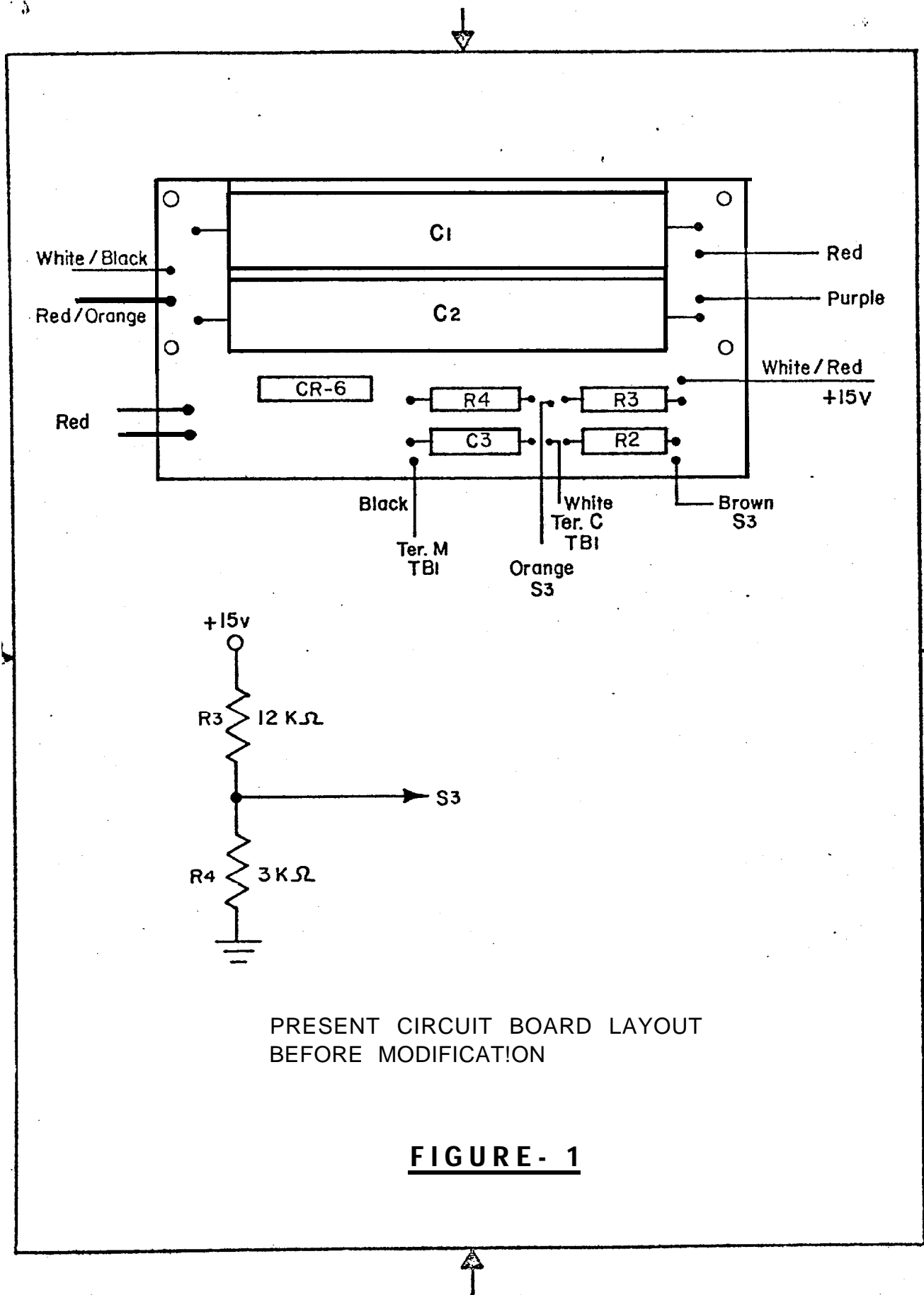
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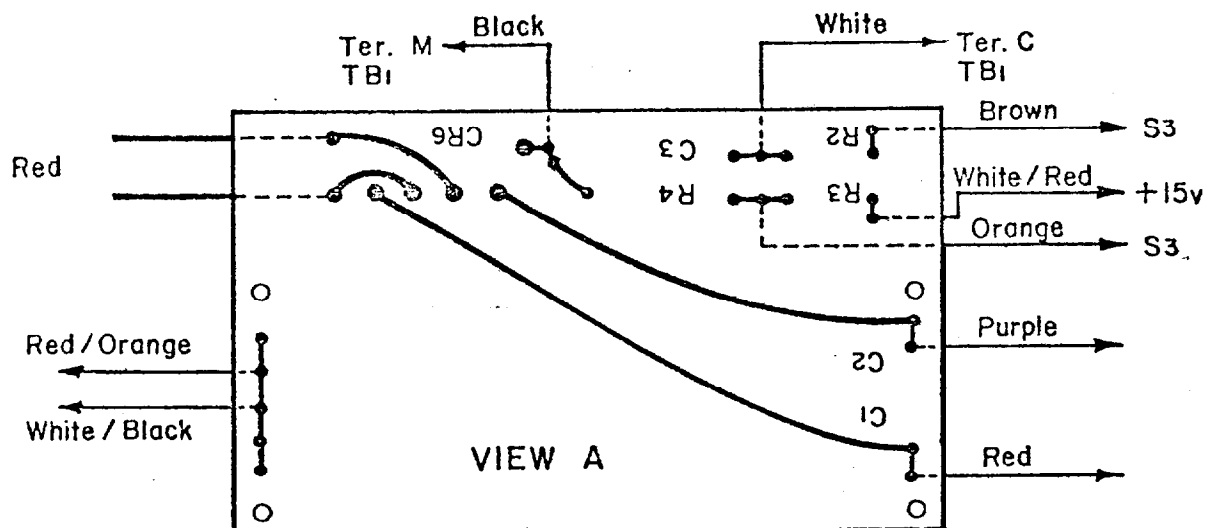
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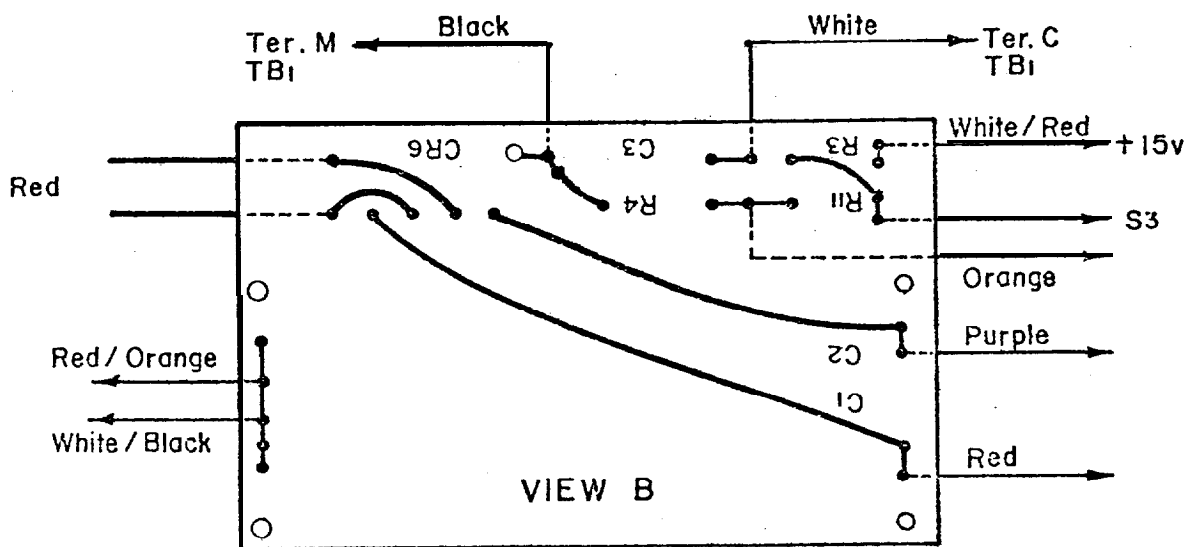
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REMARKS (PROBLEMS ENCOUNTERED OR OTHER PERTINENT INFORMATION):



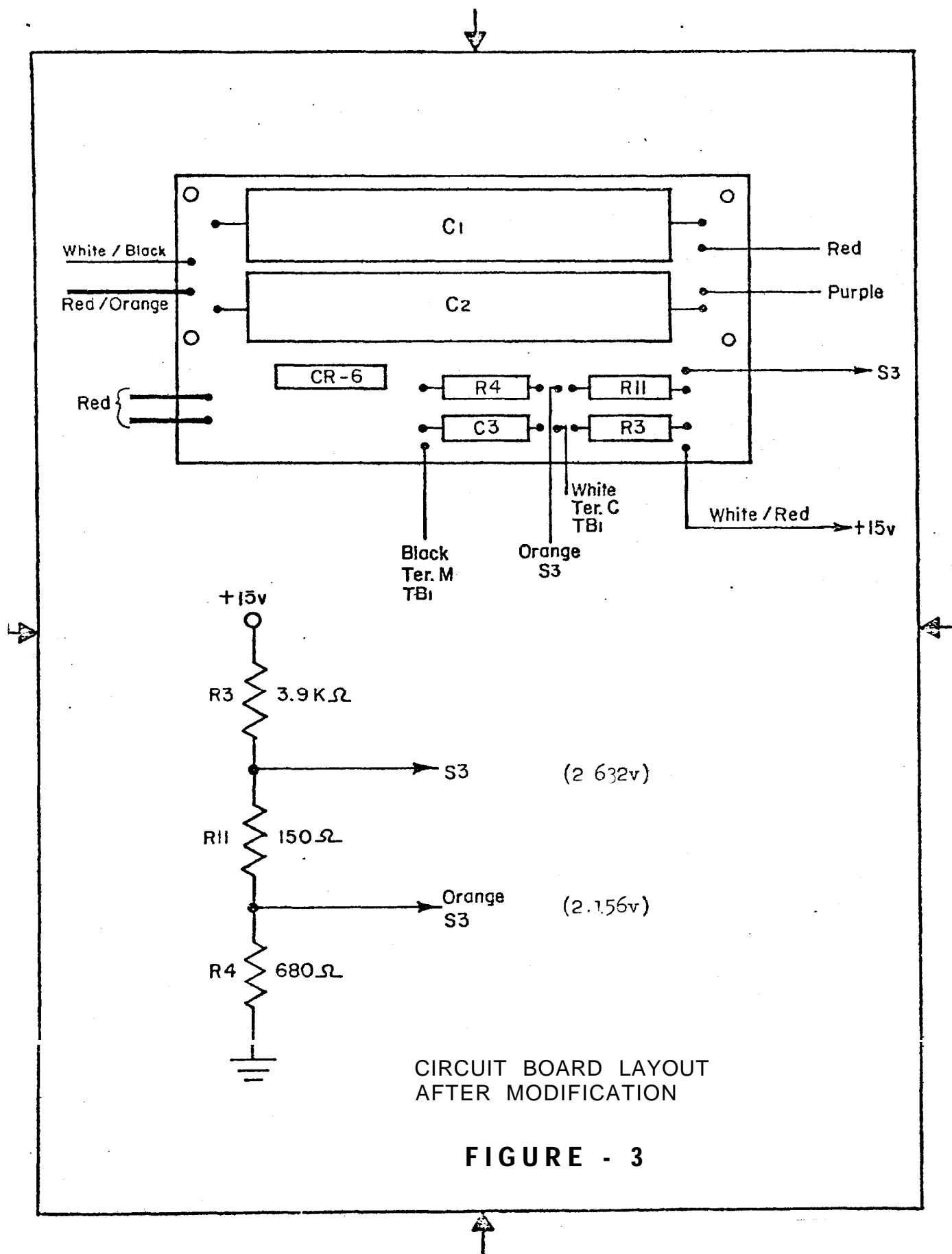


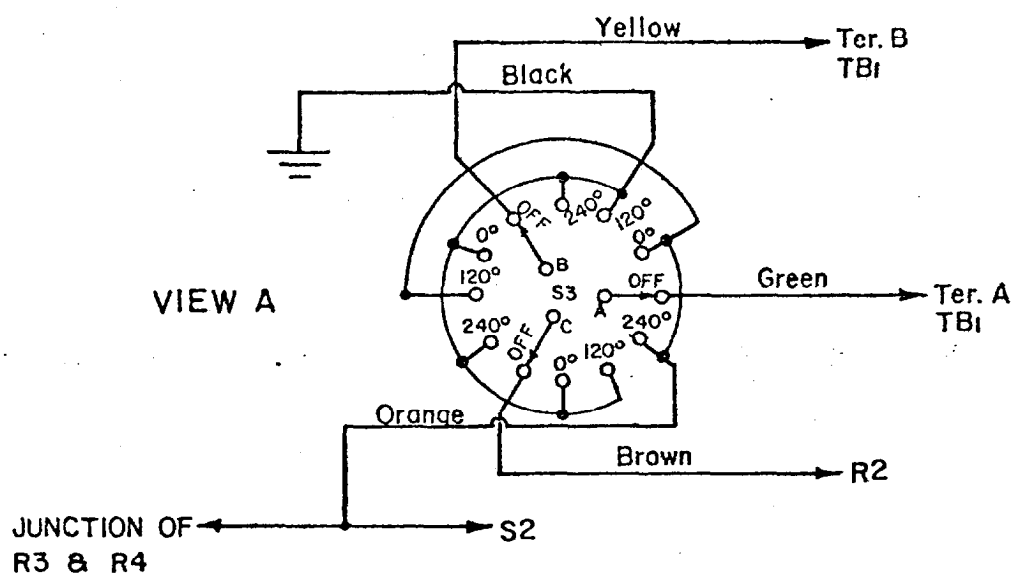
UNDERSIDE OF PRINTED CIRCUIT BOARD BEFORE MODIFICATION



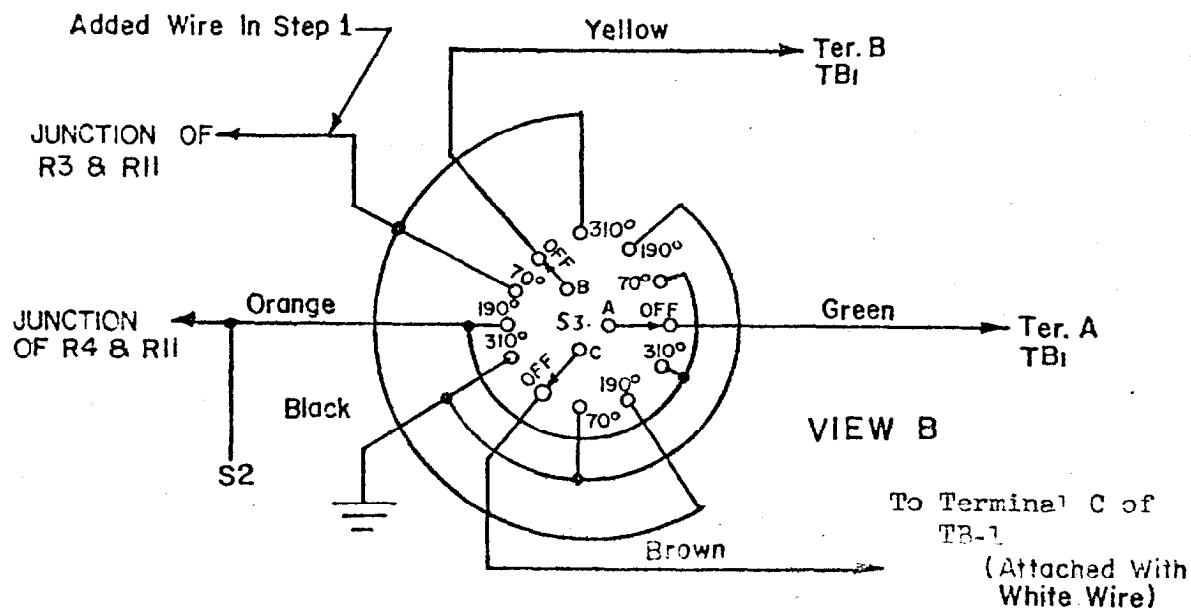
UNDERSIDE OF PRINTED CIRCUIT BOARD AFTER MODIFICATION

FIGURE - 2



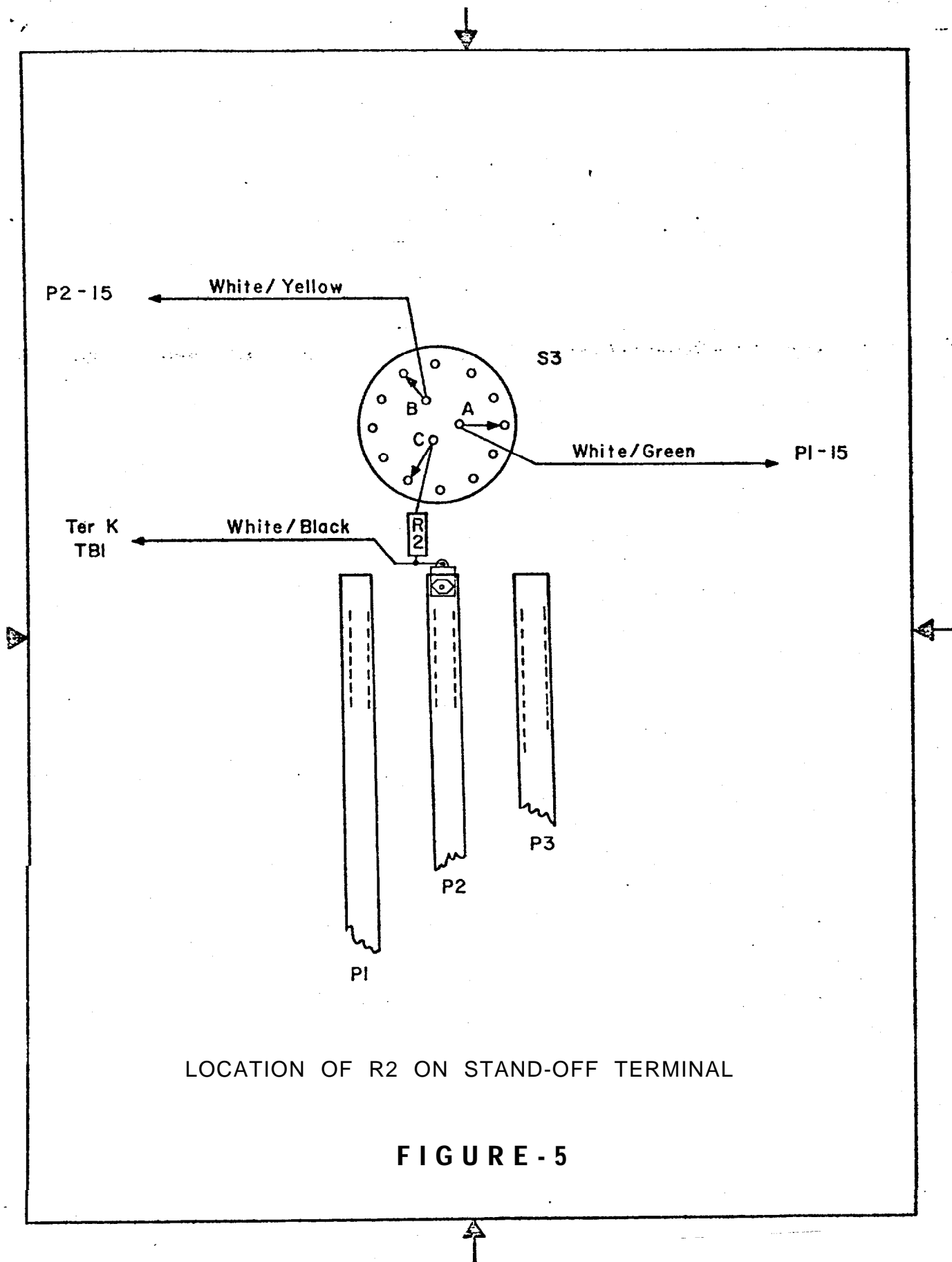


LAYOUT OF S3 BEFORE MODIFICATION



LAYOUT OF S3 AFTER MODIFICATION

FIGURE - 4



Calibration:

The retransmitter does not have a calibration adjustment for wind speed or direction like the F607 due to the very high input resistance of the circuitry. The speed test voltage is obtained from a constant voltage source which maintains a constant reading for wind speed checks. The indication obtained for wind speed tests when the unit is installed, should not change unless the meter, power supply, or the wind speed circuitry becomes defective. The wind direction test voltage is obtained by the same method and the indications obtained for the initial test should not vary unless some circuitry is defective.

Printed circuit board positions A and B are for wind direction. Printed circuit board position C is for wind speed. Module C should also be tested in position A or B to verify that the power amplifier section is working satisfactorily so that it can be utilized in position A or B also.

Switch S3, has access to two voltage sources(2.16v and 2.63v). It can provide either polarity of these two and also either polarity of the difference(.47v) to the inputs of the printed circuit boards A and B. The position of S3 determines the inputs to the boards and provides check points of 70, 190, and 310 degrees. Any indication within plus or minus 5 degrees from the setting of S3 is acceptable. Values outside the tolerance should be investigated, if it is known that the direction meter is accurate.

The wind speed test switch S2, in TEST position, supplies a 2.156 VDC to the input of printed circuit board C. S2 is connected as an OFF/ON switch with no provision for reversing the polarity. This is the reason for changing board C with boards A or B for complete testing. The wind speed meter should indicate about 46.8 knots in the test position. However, due to line voltage variations, manufacturing processes of component parts and junction resistivity, this indication may vary. Therefore, the indication noted upon installation should be regarded as valid for all future comparisons if it falls within the area of 47.0 knots. Indications of values obtained at later dates, varying from the initial indication, should be investigated if it is known that the speed meter is accurate.

Maintenance:

The retransmitter is considered to be an on-station repairable item and should be treated as such. Spare boards and power supplies are available from the CLSC and most of the other components are commercial grade which should be obtained locally. Figure 3 is the schematic diagram and parts list of the F611 retransmitter.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

August 27, 1979

OA/W5141 - JM

TO: All NWS Regional Headquarters, Area Electronics Supervisors,
and Electronics Technicians.

FROM: *for* OA/W51 J. M. St. Clair *JK*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8,
Issuance 79-9

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 3.2 Wind
Modification No. 3.

2. Summary:

Wind Modification No. 3 provides instructions for the DARDC Wind
Retrofit. This retrofit replaces the Climatronics Mark 10 Wind
Transmitters with F420C/D Wind Transmitters.

3. Effect on Other Instructions:

This modification supersedes all previous instructions and parts
lists pertaining to DARDC Winds. Temporary documentation is
attached. Permanent revisions to the DARDC Manual will follow
later this year.

4. Reporting Equipment Modifications:

All completed equipment modifications shall be reported on the
H-28 Engineering Progress Report per EHB-4, part 2.

EHB-8
Issuance 79-9



Engineering Division
W5141

July 25, 1979

WIND MODIFICATION NOTE No. 3

(For Electronics Technicians)

SUBJECT : DARDC Wind Retrofit

PURPOSE : To Improve the Operating Performance and Reduce
Maintenance Costs of the DARDC Wind Systems

EQUIPMENT AFFECTED : F455 DARDC Wind Systems

PARTS REQUIRED : 1 F420C/D-1 Transmitter, Wind Speed with
Rotor Assembly
1 F420C/D-2 Transmitter, Wind Direction
with Vane
1 B701-1A12W Wind Direction Module
2 B701-1A13W Wind Speed/Gust Modules

The above items are being sent to the sites to be retrofitted this year. Additional solar powered panels and batteries are being sent to solar powered sites. Due to configuration differences, masts and cabling will be procured by Regional Facilities.

GENERAL: This modification replaces the mechanically fragile Climatronics Mark Wind Transmitters with F420C/D Wind Transmitters. The F420D Transmitters were purchased from the Belfort Instruments Company for this retrofit. They differ from the F420C in color and shape but they are electrically and mechanically interchangeable with the F420C.

This change to F420 Wind Transmitters also requires a change of interface modules and cabling.

Module 8W will be replaced by Module 12W. Modules 9W and 10W will be replaced by Module 13W. (Module 11W where used, will also be replaced by Module 13W.)

As the retrofitted system uses more power, additional solar panels and batteries are required at solar powered sites.

PROCEDURE:

1. Disconnect power from DARDC translator by unplugging J6.
2. Remove cards from positions 8, 9, and 10 in DARDC translator. If there

is an A11W card in position 11, remove it also.

3. Remove F455 Climatronics Mark 10 Wind System, consisting of transmitters, crossarm, and cabling.
4. Install additional solar panels and/or batteries as required for your particular site.
5. Mount the F420 Wind Transmitters per Section 2 of the F420 Manual.
NOTE: Orient the Direction Transmitter 5.6 degrees west of True North. (This is to compensate so the output direction is in the center of each of 32 11.2 degree sectors.) Terminate the cable from the transmitters in the DARDC enclosure per NWS Drawing B701-DR029. Rewire the DARDC enclosure per NWS Drawing B701-DR029.
6. Connect power and test set to DARDC translator and verify DARDC operation.
7. Disconnect power from DARDC translator by unplugging J6.
8. Insert the 1A12W Wind Direction Module into position 8 of DARDC translator.
9. Program a 1A13W Wind Speed/Gust Module for Speed and insert into position 9 of DARDC translator. To program for speed: Open S1-SEC, close S1-MIN, open S2-MIN, and open S2-MAX.
10. Program the other 1A13W module for Gust and insert into position 10 of DARDC translator. To program for Gust: Close S1-SEC, open S1-MIN, open S2-MIN, and close S2-MAX.
11. Connect power to DARDC translator.
12. Wait two minutes. Readout Instrument 1. Verify that readout matches local wind direction.
13. Readout Instrument 2. Verify that readout matches local wind speed (one minute average).
14. Readout Instrument 3. Verify that readout matches local wind peak gust (since last interrogation),
15. Remove test set, Have DARDC interrogate remotely, if possible, and verify that readouts match local wind conditions.

CALIBRATION OF MODULES:

The Wind Direction Module 1A12W requires no calibration, The Wind Speed/Gust Modules do require calibration. A variable voltage source such as the F855 or Potentiometer T370B can supply the necessary voltages and a Digital Multimeter capable of reading 3-1/2 digits such as Data Precision Model 245 will suffice.

1. Disconnect J6 at DARDC.
2. Disconnect Wind Speed at TB2-21 of DARDC Enclosure.
3. Remove both 1A13W Wind Speed Modules and adjust switches as follows: Close switch S1-SEC and open the other three switches on the module. Reinsert modules in their respective places.
4. Replace J6 power plug.
5. Set up DARDC and DARDC Test Set so as to readout the modules to be calibrated.
6. Connect the positive leads of the variable Voltage source and the Digital voltmeter in parallel to TB2-21,
7. Connect the negative leads of the power source and Multimeter to TB2-20.
8. Turn on power of the DARDC Test Set, Variable Voltage Source and Digital Multimeter.
9. With a 503 millivolt input, adjust the zero pot to obtain an output of 10 ± 1 ; ie., 0009, 0010, or 0011.
10. With a 9.0626 (9.063) volt input, adjust the span pot to obtain an output of 0180 ± 1 .
11. Repeat Steps 9 and 10 until no further adjustments are required.
12. With a zero volt input, output should be 0000. If it is not 0000, adjust the zero pot and go back to Step 9.
13. As a final check, input 5.0348 volts output should be 0100 ± 1 . NOTE: Other calibration points may be chosen. The module should be calibrated for 50.348 millivolts per knot (count). For example, 1 volt equals 19.86 knots, 5 volts = 99.31 knots.
14. Turn off power on the DARDC Test Set, Variable Voltage Source, Digital Multimeter and then disconnect them from test.
15. Turn off power to DARDC by removing plug J6.

16. Remove Wind Speed and Wind Gust Modules and program them as previously done under PROCEDURE Steps 9 and 10. (See Page 2).
17. Replace the Wind Speed and Wind Gust Modules in their respective places; position 9 for speed and position 10 for gust.
18. Replace the wire disconnected previously under Step 2 of CALIBRATION. This wire comes from the Wind Speed Sensor and goes to TB2-21.
19. Return power to the DARDC by plugging in J6.

DISPOSITION:

Return all Climatronics Mark 10 Wind System and all 1A1A9W, 1A1A10W, and 1A1A11W Wind Interface Modules to CLSC. Tag all returned items with site name.

DOCUMENTATION:

Temporary schematics and Theory of Operation of the two new interface modules are attached. Permanent revisions to the DARDC Manual are scheduled to be delivered in December 1979.

Attachments: DARDC Wind Direction Schematic B701-DR019
DARDC Wind Speed/Gust Schematic B701-DR022
Interconnection Wiring Diagram for F420C/D
Wind Transmitters B701-DR029
Theory of Operation (4 Pages)

1A12W DARDC WIND DIRECTION

This module interfaces an F420C or RAMOS wind direction sensor to the DARDC. Its output is a damped average with a twelve second time constant. Input from the sensor is resolved into 32 sections (11 1/4). The output is rounded to 10; thus directions of 40°, 130°, 220°, and 310° are not valid outputs.

1. Power,

Distributes power to module circuitry and sensor. Transistor Q1 provides current amplification. (F420 Sensor draws 100mA).

2. Clock Generator.

Provides module timing signals. Inverter U4D is configured as an oscillator. Its output is used to step the A/D converter. This output is also divided by 32 by counters U13A and U18B to produce the signal labeled CYCLE. Start of conversion, end of conversion, and damping update are all determined by CYCLE,

The oscillator frequency may be increased by shorting TP1 to TP2. This reduces the damping time constant so that the output is nearly the instantaneous wind direction: These jumpers are used during acceptance testing.

3. Analog to Digital Converter.

Resolves the sensor output into 32 directions. Operational Amplifier U17D provides a reference voltage at half the supply voltage. Inputs to comparator UI7C are halved so that it won't be saturated.

When CYCLE is high, counter U13B and flip-flop U19A are reset. When CYCLE goes low, counter U13B is allowed to count. As the counter counts, the voltage at U12, pin 16 increases. When the voltage at U17C pin 10 exceeds the voltage at UI7C pin 9, the comparator output goes high. This sets flip-flop U19A, disabling the counter. If the flip-flop has not been set by the time the counter reaches its maximum count, gate U14A will set the flip-flop. Thus the output of the counter, when the flip-flop is set, is a four bit representation of input A.

Simultaneously comparator UI7B is comparing inputs B and C to determine if the direction is greater than 180°. When CYCLE goes high these signals are clocked into register U11 and flip-flop U18A. The contents of register U11 are complemented if the direction is less than 180°. Thus the five outputs of this section are a parallel binary (modulus 32) representation of the instantaneous wind direction.

1A12W DARDC WIND DIRECTION

4. Damper.

Calculates and stores the damped wind direction. The damped wind direction is stored in registers U3 and U7.

The adders, U1 and U5, together with inverters U4, calculate the difference between the instantaneous and damped wind directions. This difference is divided by 8 by a hardwired parallel three bit right arithmetic shift, (Right arithmetic shift preserves the sign of the difference.) The signed divided difference is added to the damped wind direction by adders, U2 and U6, to produce a new damped direction. The new damped wind direction is clocked into the registers, U3 and U7, on the positive transition of CYCLE.

The frequency of CYCLE and the division by 8 determine the damping time constant. The five outputs of this section are a parallel binary (Modulus 32) representation of the damped wind direction.

5. Encoder.

Produces a binary coded decimal (BCD) degrees representation of the damped wind direction. The five input bits are assigned the weights of 10, 20, 50, 90, and 180 degrees. Since binary adders are used, the weights are 1, 2, 5, 15, and 30 respectively.

The first four (least significant) bits are summed by adder U8. Those bits are 1, 2, 5, and 15. The 15 represents negative 1, ($2^4 - 1$), so the output from the adder is the correct BCD sum except when the direction is 90 degrees (or 270 degrees). Even in this case, the 10 degrees BCD bit (U8-S1) is correct so it is output from this section.

The remaining four outputs of adder U8 and the most significant input bit are added by adder U9. The 30 represents negative 2, ($2^5 - 2$). The output of this adder is the correct BCD sum except when the direction is 90, 180, 270, 280, or 290 degrees. Even in these cases, the 100 and 200 degree BCD bits are correct so they are output from this section.

The six incorrect sums are identified when both U9-S2 and U9-S3 are high. This detection is performed by gate U14B. The correction of adding ten, is performed by adder U10. Thus the correct 20, 40, and 80 degree BCD bits are output from this section.

6. Shift Register (similar to 3, in DARDC Manual, Page 7-151.

1A13W DARDC WIND SPEED/GUST

This module interfaces the F420 or RAMOS wind speed sensor to the DARDC. It also has more general applications as an analog to digital converter for the DARDC. It can be programmed to output an instantaneous, average, maximum, or minimum value in a variety of engineering units. For this application it is programmed to output average wind speed or maximum wind speed (gust in knots),

This module has three modes of operation: Ambient, Maximum, and Minimum. In Ambient mode the output tracks the input: If the input is constant, the output toggles between two values. In Maximum mode the counter can only count up: The counter is reset to 000 after interrogation. In Minimum mode the counter can only count down: The counter is preset to 999 after interrogation.

1. Power.

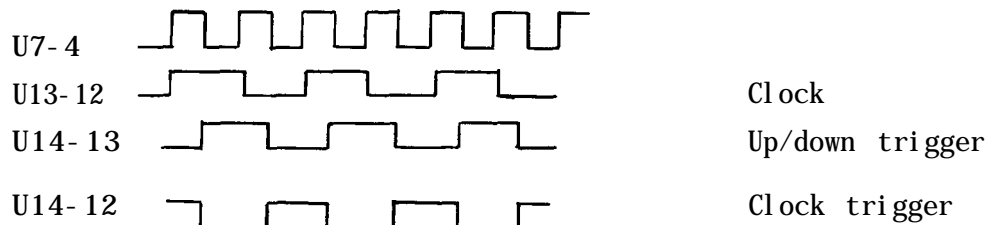
Distributes power to module circuitry.

2. Amplifier.

Offsets, scales, buffers, and averages (if desired) input voltage. The input is divided by $2220/470 \approx 4.7$ so that the operational amplifiers, U2A and U2D, will not be saturated.

3. Clock Generator,

Generates timing signals for module circuitry to assure that the Counter functions properly. Inverter U7B is configured as an oscillator at a frequency of 10 Hz. The oscillator is inhibited during a LOAD INSTRUMENT ENABLE by gate U12A. The generated timing signals are shown below:



4. Comparator.

Compares the AMPLIFIER output and the DIGITAL TO ANALOG CONVERTER output to produce control signals for the counter. The following signals are produced:

- LATCH indicates that the counter needs to be clocked in the opposite direction from the previous count,
- RESET initializes the counter in the maximum (gust) mode,

- UP/DOWN dictates which way the counter will count,
- PRESET initializes the counter in the minimum mode,
- CLOCK is the signal which the counter counts,
- CARRY OUT is feedback from the counter indicating maximum count in the up mode or minimum count in the down mode.

Inverters U7, D, E, F, gate U8A, and associated circuitry generate the initializing pulse after each interrogation.

5. Latch Driver.

Future option used with a future clock card to indicate the time of maximum or minimum.

6. Counter.

Generates the output value under control of COMPARATOR. The counter is a three-digit BCD decade up/down counter. It will count clock pulses if LATCH is low. RESET will load 000 into the counter: PRESET will load 999.

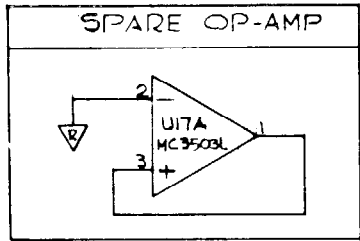
7. Digital to Analog Converter.

Produces an analog signal for COMPARATOR from the output value of counter. U1 is a BCD ladder network. Operational amplifier U2B provides scaling and buffering. Buffers U3, U4, and U5 provide current drive and level shifting.

8. Shift Register (similar to 3. in DARDC Manual. Page 7-151.

8 7 6 5 4 3 2 1

REVISIONS				
Zone	Ltr	Description	Date	Rev. By
5C	A	CHANGED R2 FROM 2.2M TO 3.9M	4/19/78	REB RJA



FLAG NOTE

1 SHORING TP1 TO TP2 INCREASES OSCILLATOR FREQUENCY, WHICH REDUCES THE DAMPING TIME CONSTANT.

GENERAL NOTES

UNLESS OTHERWISE SPECIFIED

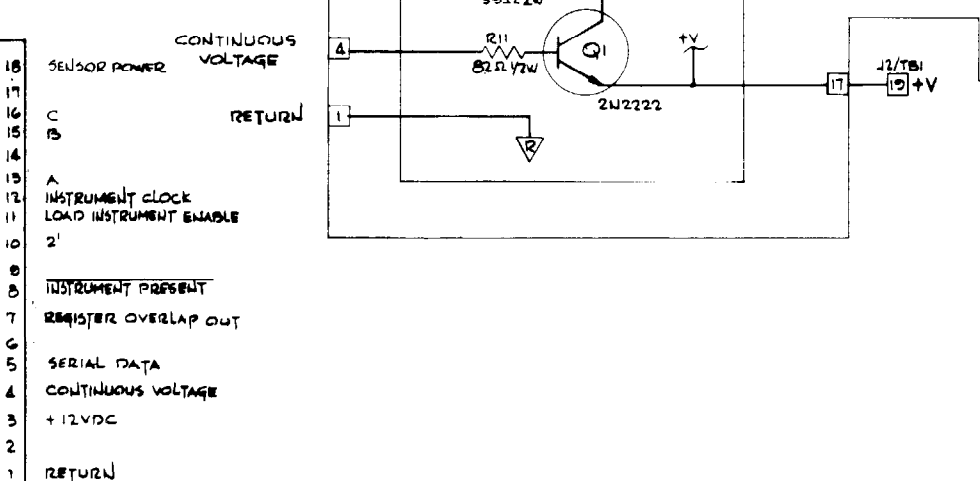
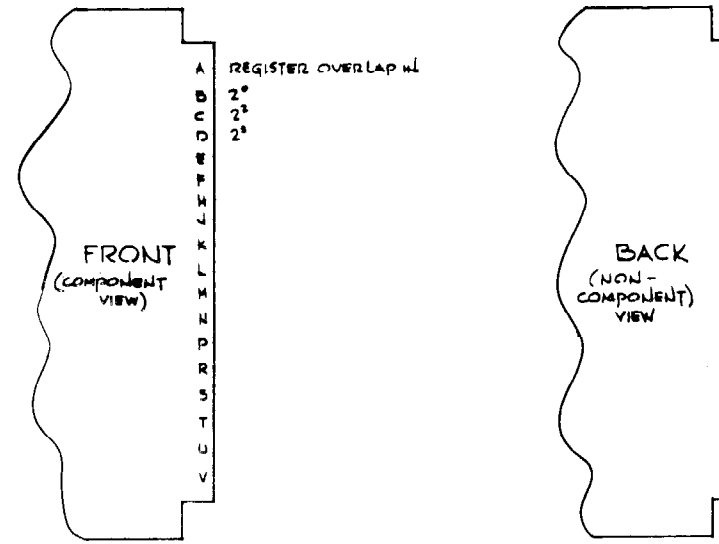
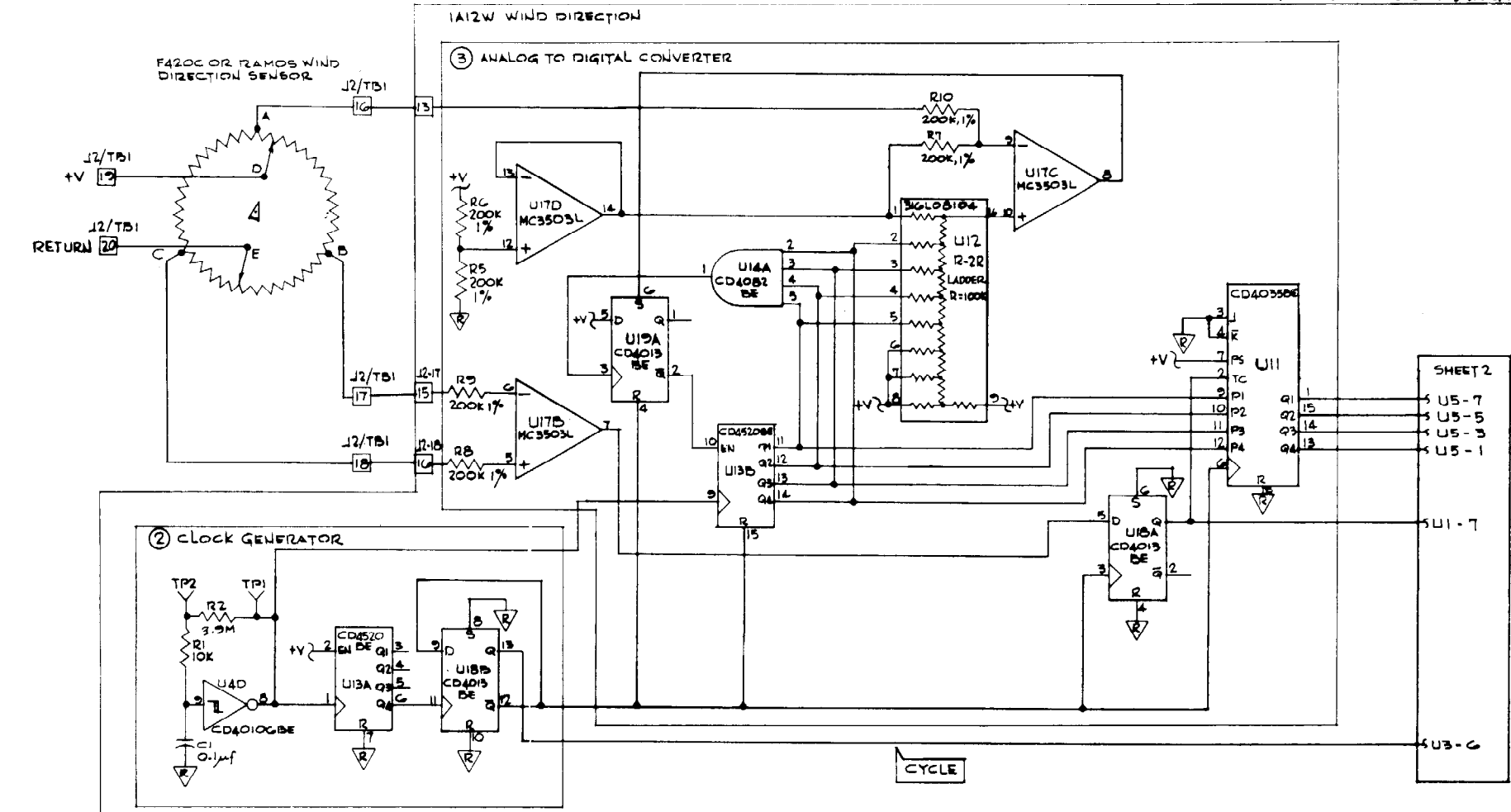
A. RESISTANCE VALUES ARE IN OHMS, 5%, 1/4 WATT.

B. CAPACITANCE VALUES ARE IN MICROFARADS, 20%.

C. DIODES ARE IN 4148

D. INTEGRATED CIRCUIT POWER CONNECTIONS:

IC REFERENCE DESIGNATOR	+V TO PIN	RETURN TO PIN
U1, U2, U3, U5, U6, U7, U8, U9, U10, U11, U13, U15, U16	16	8
U4, U14, U18, U19	14	7
U17	4	11



PROD NO.	ELEC REF DES	NOMENCLATURE OR DESCRIPTION	QTY REQD	PART OR IDENTIFYING NO.	WIRE SIZE	CORE IDENT	SPECIFICATION OR MATERIAL
LIST OF MATERIAL							
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: ANGLES ± .5 3 PLACE DECIMALS ± .005 2 PLACE DECIMALS ± .02							
ENGINEERING DIVISION SILVER SPRING, MD. 20910							
PREPARED BY R. BALCH 4/19/78 CHECKED BY R. LOWERY 6/11/78 DESIGN BY R. AHLBERG 2/7/78							
APPROVED BY [Signature]							
U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE							
1A12WDARDC WIND DIRECTION SCHEMATIC							
SIZE D		DATE 6-9-78		DRAWING NO. B701-DR019			
SCALE: NONE		SHEET 3		FILE			

8

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3

2

1

REVISIONS					
Zone	Ltr	Description	Date	Rev By	App'd

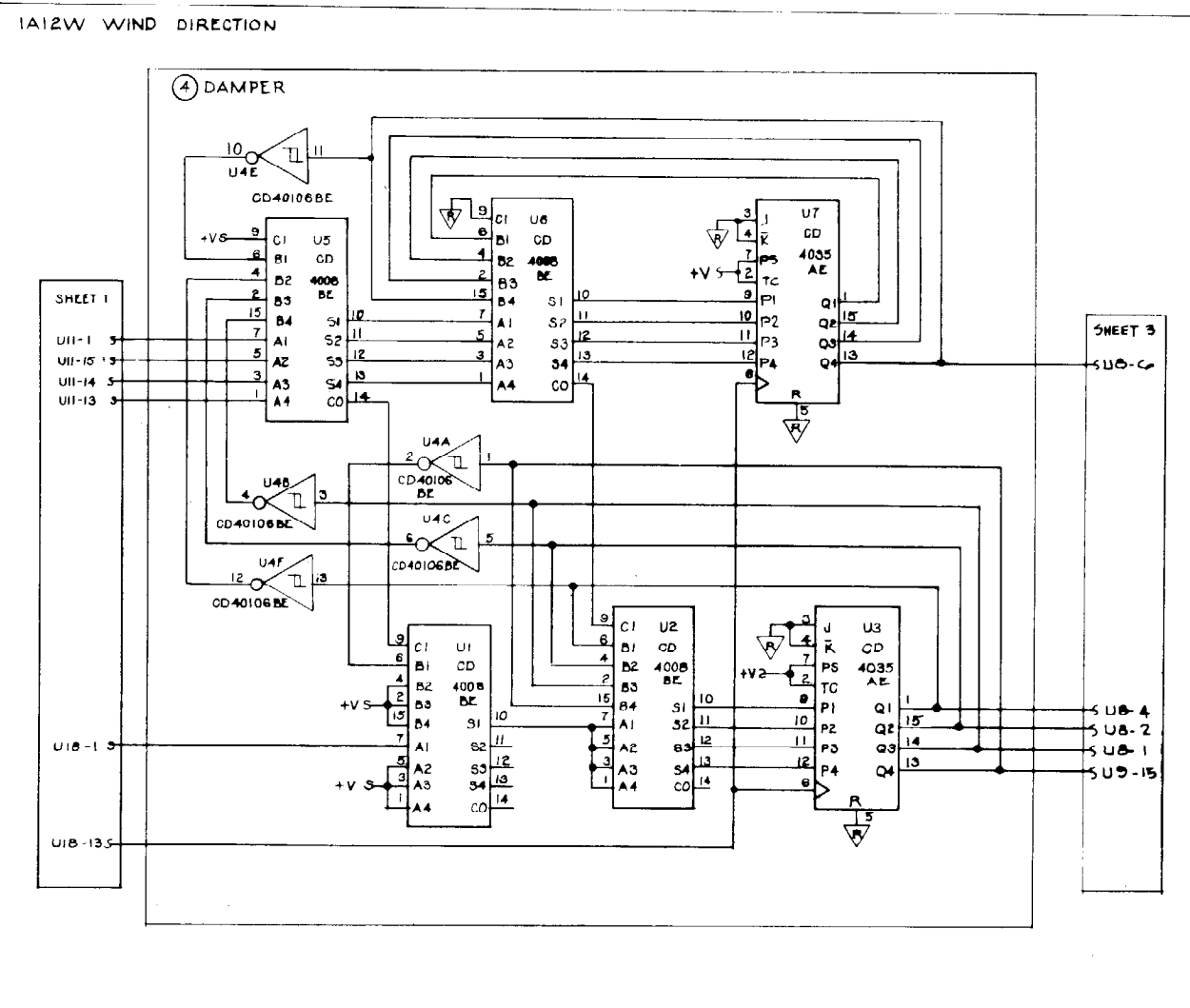




FIG. NO.	ELEC. REF.	DESCRIPTION	QTY. REQD.	PART OR IDENTIFYING NO.	SIZE	CODE	SPECIFICATION OR MATERIAL
LIST OF MATERIAL							
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: ANGLES ± 5°				ENGINEERING DIVISION SILVER SPRING, MD. 20810			
3 PLACE DECIMALS ± .005 2 PLACE DECIMALS ± .00				SILVER SPRING, MD. 20810			
				PREPARED BY J.C. 4/8/78			
				CHECKED BY R. LOWERY 4/8/78			
DESIGNED BY E.C.A. 2/7/78				APPROVED BY 			
U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE				1A12W DARDC WIND DIRECTION SCHEMATIC			
DRAWING NO. B701-DR019				SCALE: NONE			

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REVISIONS

Zone	Ltr.	Description	Date	Rev. By	App'd
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1A12W WIND DIRECTION

④ DAMPER

SHEET 1

U11-1 5

U11-15 13

U11-14 5

U11-13 3

U18-1 5

U18-13 5



SHEET 3

SUB-4

SUB-2

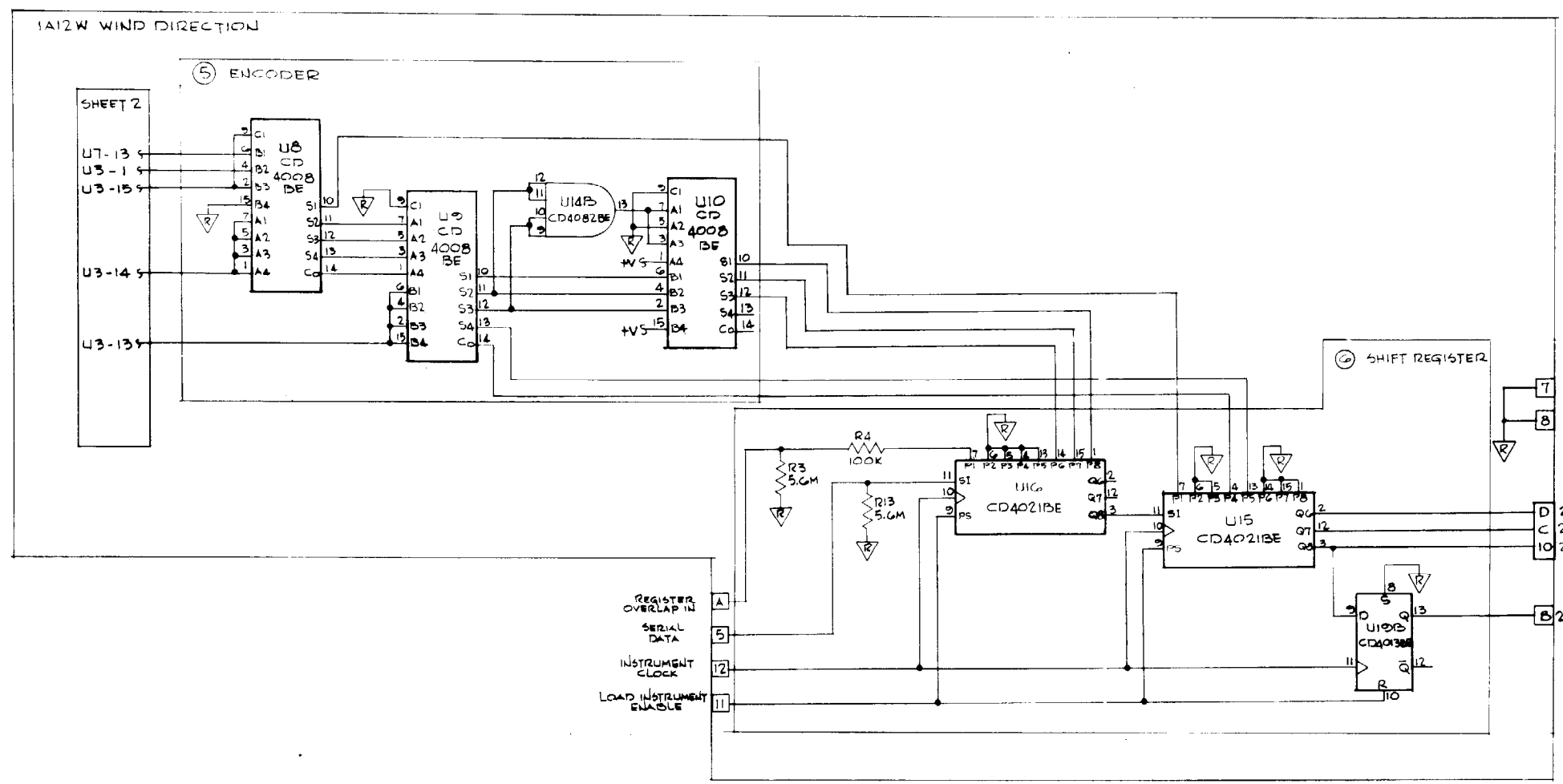
SUB-1

SUB-15

FIG. NO.	ELEC. REF. DES.	NOMENCLATURE OR DESCRIPTION	QTY. REQD.	PART OR IDENTIFYING NO.	MIN. SIZE	CODE	SPECIFICATION OR MATERIAL	
LIST OF MATERIAL								
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: ANGLES ± .5° 3 PLACE DECIMALS ± .005 2 PLACE DECIMALS ± .01				ENGINEERING DIVISION SILVER SPRING, MD. 20910				U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE
				PREPARED J.C. 6/7/78		DATE 6-7-78		
				CHECKED R. LOWERY 6/6/78		DRAWING NO. 15701-DR010		
DESIGN R.C.A. 2/7/78				APPROVED BY 		SHEET 2 OF 3		
				SCALE: NONE		FILE		

8 7 6 5 4 3 2 1

REVISIONS				
Zone	Ltr	Description	Date	Rev. By



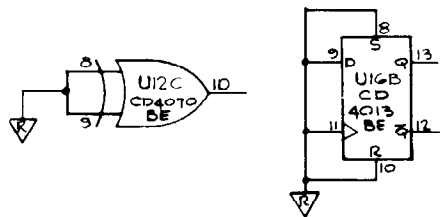
FIND NO.	ELEC REF DES	NOMENCLATURE OR DESCRIPTION	QTY REQD	PART OR IDENTIFYING NO.	DWG SIZE	CONV IDENT	SPECIFICATION OR MATERIAL
LIST OF MATERIAL							
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: ANGLES ± 1° 3 PLACE DECIMALS ± .005 2 PLACE DECIMALS ± .02				ENGINEERING DIVISION SILVER SPRING, MD 20910			
PREPARED R.E.B. 6/6/78 CHECKED E. LOWERY 6/7/78 DESIGN R. AHLBERG 2/7/78 APPROVED BY <i>[Signature]</i> APPROVED BY				U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE 1A12W DARDC WIND DIRECTION SCHEMATIC			
NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE				SIZE DATE D 6-9-78 DRAWING NO. B 70-DR 019			
SCALE NONE				SHEET 3 of 3			

8 7 6 5 4 3 2 1

FLAG NOTES

- 1 CONNECTIONS SHOWN FOR MODULE IN WIND SPEED POSITION (1A0): FOR WIND GUST POSITION (1A10) USE J4/TB3.
- 2 ZERO AND SPAN POTENTIOMETERS: SEE SECTION ON CALIBRATION.
- 3 AMPLIFIER TIME CONSTANT SELECTION:
CLOSE S1-1 FOR A ONE SECOND AVERAGE (GUST)
CLOSE S1-2 FOR A ONE MINUTE AVERAGE (SPEED)
- 4 MODE SELECTION:
AMBIENT (SPEED) - BOTH S2-1 AND S2-2 OPEN.
MAXIMUM (GUST) - S2-1 CLOSED, S2-2 OPEN.
MINIMUM - S2-1 OPEN, S2-2 CLOSED.

SPARE INTEGRATED CIRCUITS



GENERAL NOTES

- UNLESS OTHERWISE SPECIFIED:
- A. RESISTANCE VALUES ARE IN OHMS, 5%, 1/4 WATT.
 - B. CAPACITANCE VALUES ARE IN MICROFARADS, 20%, 50 VOLTS.
 - C. INTEGRATED CIRCUIT POWER CONNECTIONS:

IC REFERENCE DESIGNATOR	VREF TO PIN	+V TO PIN	RETURN TO PIN
U2		4	11
U3, U4, U5	1		8
U7, U8, U12, U13, U14, U16		14	7
U9, U10, U11, U15, U17		16	8

REGISTER OVERLAP IN
2¹
2²
2³

FRONT
(COMPONENT)

VIEW

BACK
(NON-
COMPONENT)
VIEW

18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1

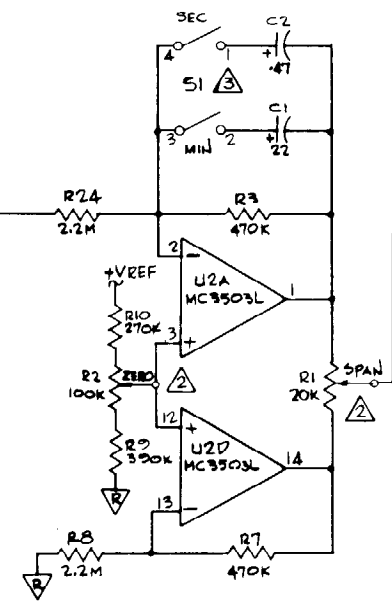
LATCH
INSTRUMENT CLOCK
INSTRUMENT CLOCK
LOAD INSTRUMENT ENABLE
SENSOR INPUT
INSTRUMENT PRESENT
REGISTER OVERLAP OUT
SERIAL DATA
SYSTEM VOLTAGE (CONTINUOUS)
+12V BATTERY
SYSTEM VOLTAGE (TRANSMITTING)
RETURN

SERIAL DATA
REGISTER OVERLAP IN
INSTRUMENT CLOCK
LOAD INSTRUMENT ENABLE

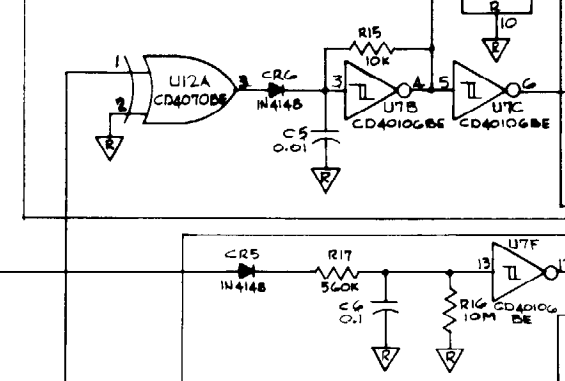
CONTINUOUS
VOLTAGE
+12V BATTERY
GROUND

1A13W WIND SPEED/GUST

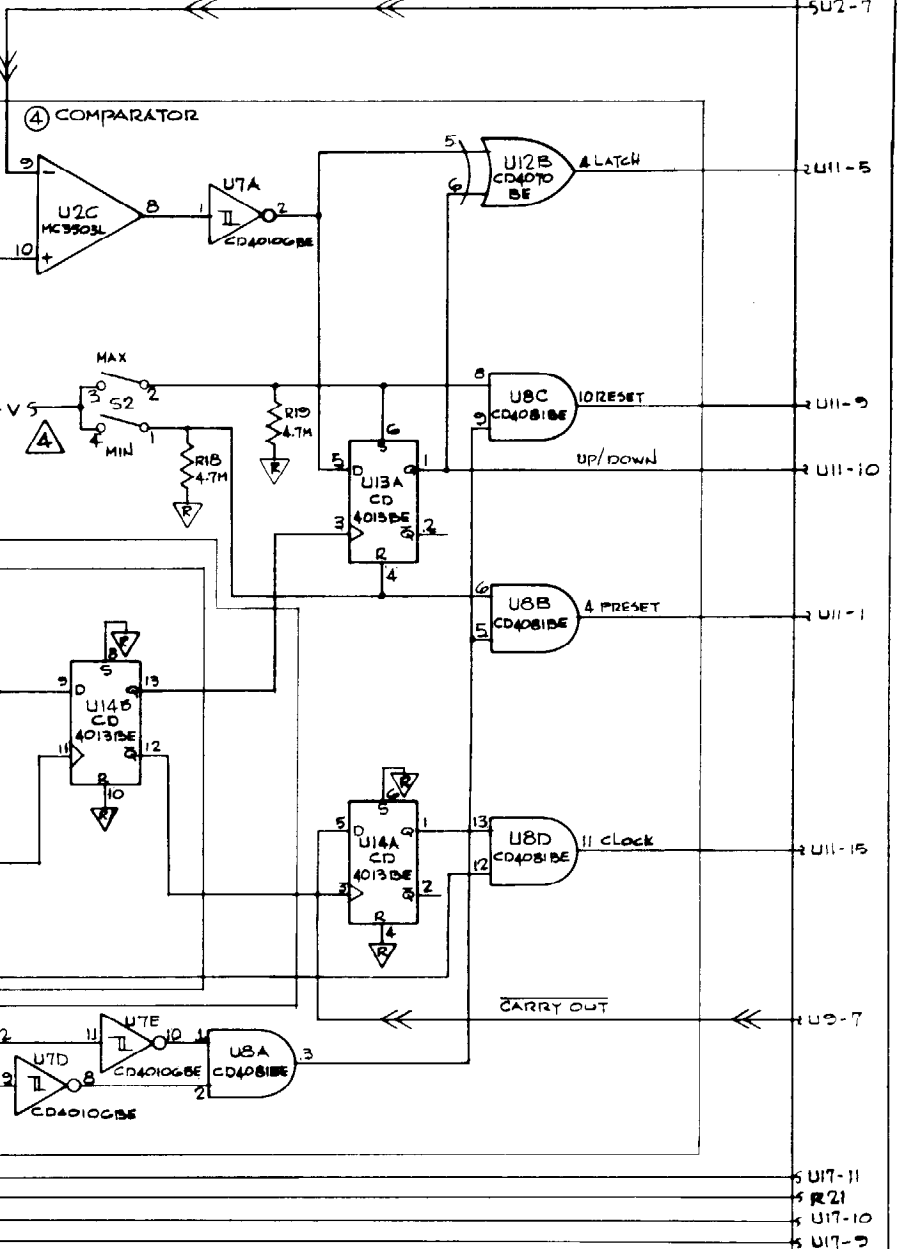
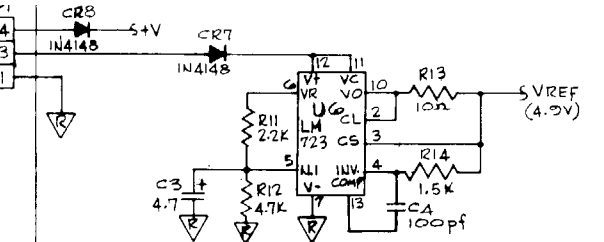
2 AMPLIFIER



3 CLOCK GENERATOR



1 POWER



FIND NO.	ELEC. REF. DES.	QUANTITY	PART OR IDENTIFYING NO.	DWG. SIZE	CODE IDENT.	SPECIFICATION OR MATERIAL
LIST OF MATERIAL						
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: ANGLES ± 5° 3 PLACE DECIMALS ± .005 1 PLACE DECIMALS ± .02		ENGINEERING DIVISION SILVER SPRING, MD. 20910		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE		
PREPARED BY: R.E.P. 6/2/78 CHECKED BY: R.L. LOWERY 6/9/78 DESIGN BY: R.A. HUBER 3/8/78 APPROVED BY: [Signature]		1A13W DARD C WIND SPEED/GUST SCHEMATIC		SHEET 1 of 2		

8

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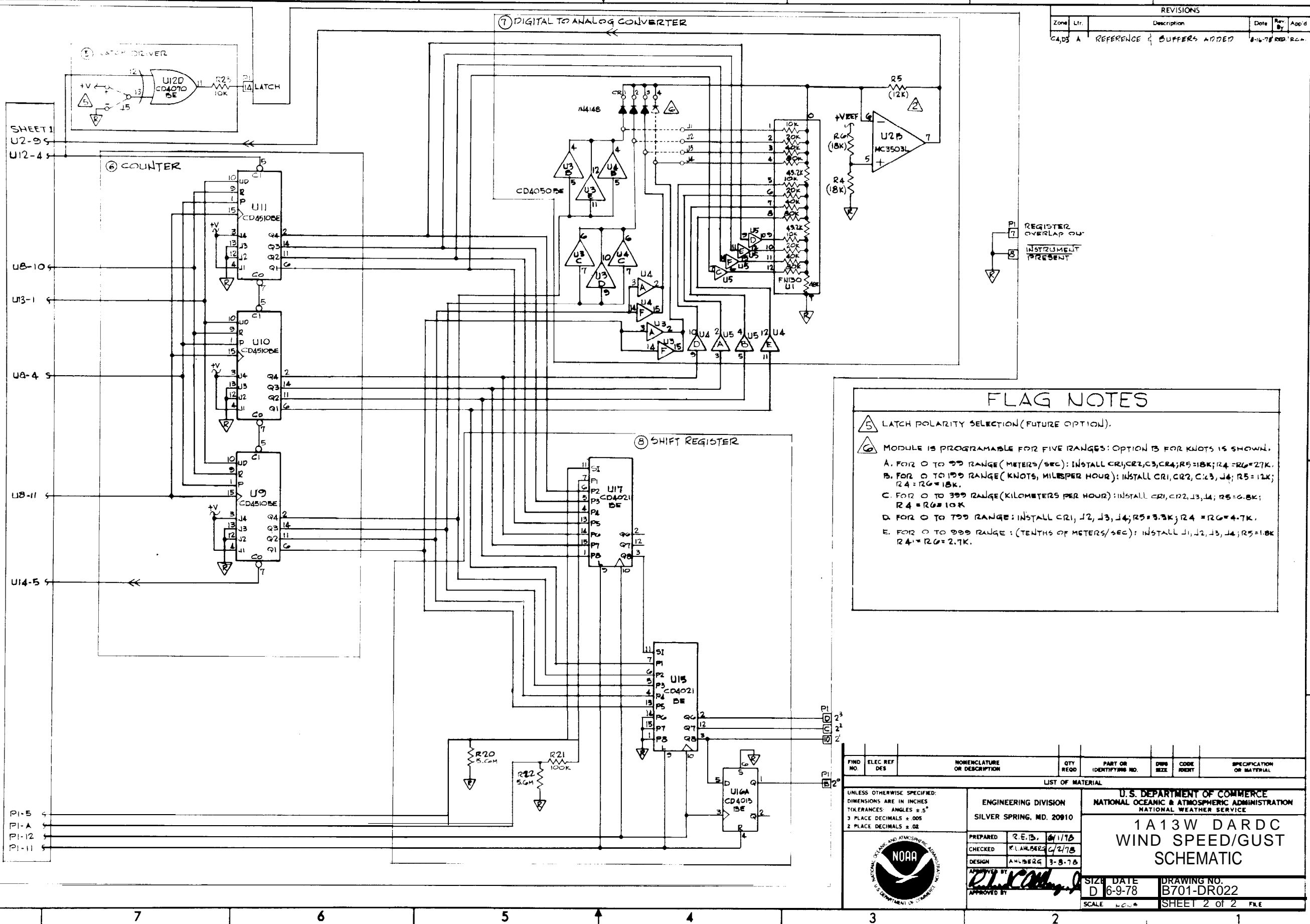
5

4

3

2

1



SHEET 1
U2-95
U12-45

U8-10
U3-1

U8-45

U8-11

U14-5

P1-5
P1-A
P1-12
P1-11

P1
REGISTER
OVERLAP ON
INSTRUMENT
PRESENT



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

June 11, 1980

OA/W5141 - JM

TO: All NWS Regional Headquarters, Area Electronics Supervisors,
and Electronics Technicians. (EHB-8 Distribution)

FROM: OA/W51 *J.M. St. Clair*
J.M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8,
Issuance 80-6

1. Material Transmitted:

Engineering Handbook No. 8 - Surface Equipment, Section 3.2;
Wind Modification No. 3, Errata No. 1.

2. Summary:

Wind Speed/Gust Drawing No. B701-DR0022, Sheet 1 of 2 was
erroneously omitted in Wind Modification No. 3. Insert the
attached drawing with the original modification note.

3. Effect on Other Instructions:

None.

EHB-8
Issuance 80-6



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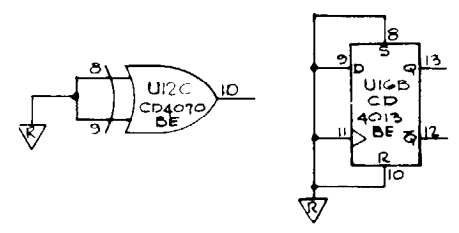
2

1

FLAG NOTES

- 1 CONNECTIONS SHOWN FOR MODULE IN WIND SPEED POSITION (1A9); FOR WIND GUST POSITION (1A10) USE J4/TB3.
- 2 ZERO AND SPAN POTENTIOMETERS: SEE SECTION ON CALIBRATION.
- 3 AMPLIFIER TIME CONSTANT SELECTION: CLOSE S1-1 FOR A ONE SECOND AVERAGE (GUST) CLOSE S1-2 FOR A ONE MINUTE AVERAGE (SPEED)
- 4 MODE SELECTION: AMBIENT (SPEED) - BOTH S2-1 AND S2-2 OPEN. MAXIMUM (GUST) - S2-1 CLOSED, S2-2 OPEN. MINIMUM - S2-1 OPEN, S2-2 CLOSED.

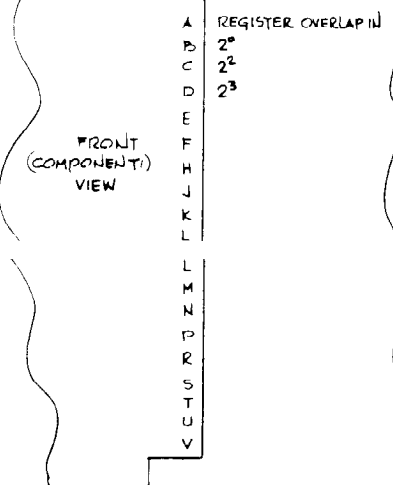
SPARE INTEGRATED CIRCUITS



GENERAL NOTES

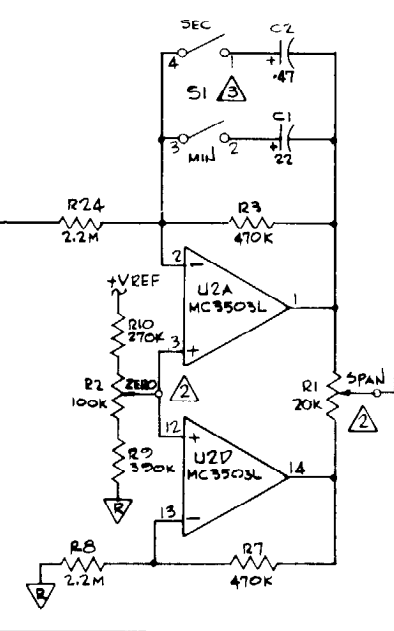
- UNLESS OTHERWISE SPECIFIED:
- A. RESISTANCE VALUES ARE IN OHMS, 5%, 1/4 WATT.
- B. CAPACITANCE VALUES ARE IN MICROFARADS, 20%, 50 VOLTS.
- C. INTEGRATED CIRCUIT POWER CONNECTIONS:

IC REFERENCE DESIGNATOR	VREF TO PIN	+V TO PIN	RETURN TO PIN
U2		4	11
U3, U4, U5	1		8
U7, U8, U12, U13, U14, U16		14	7
U9, U10, U11, U15, U17		16	8

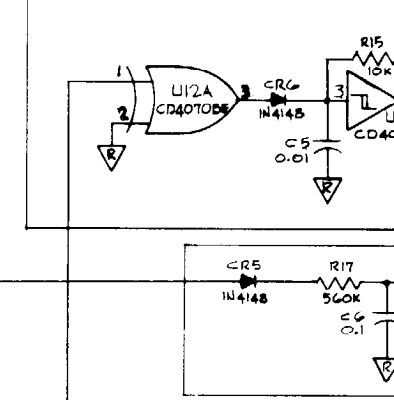


1A13W WIND SPEED/GUST

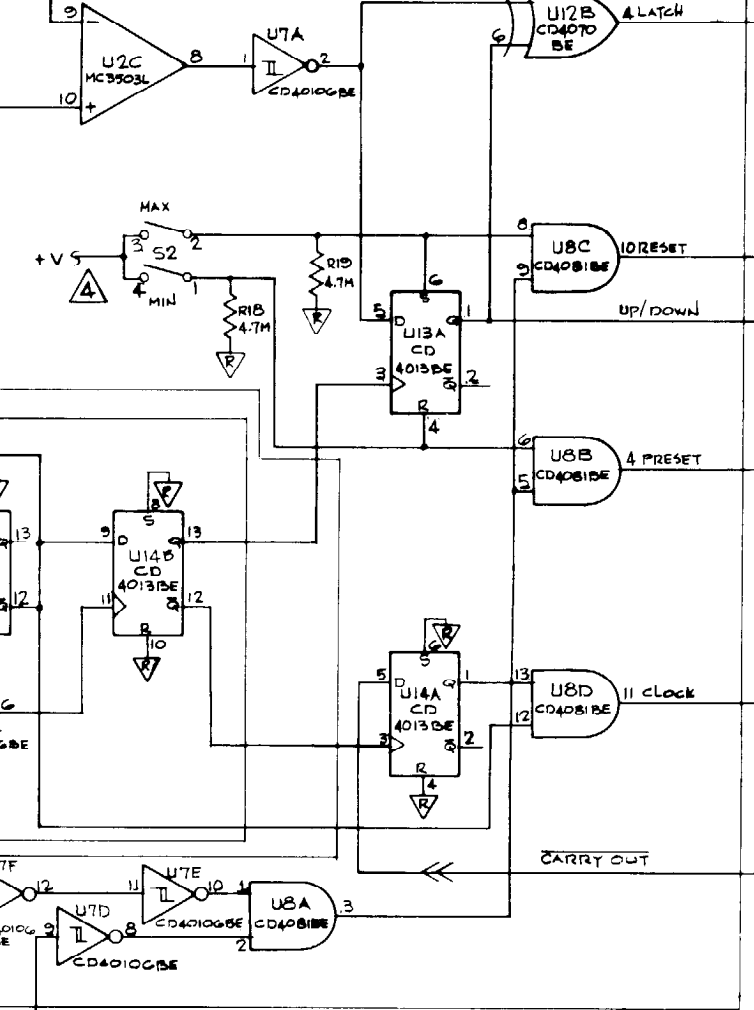
2 AMPLIFIER



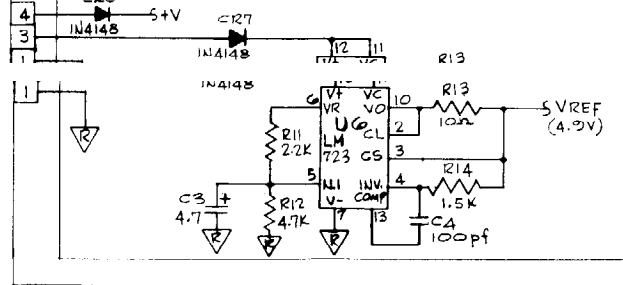
3 CLOCK GENERATOR



4 COMPARATOR



1 POWER



REVISIONS				
Zone	Ltr	Description	Date	Rev'd
U5C5	A	REFERENCE REGULATOR ADDED	1-16-78	ECG

SHEET 2
SU2-7

U11-5

U11-9

U11-10

U11-1

U11-15

U9-7

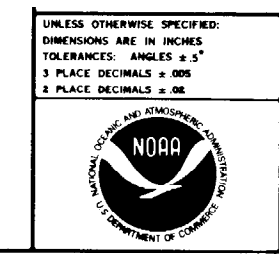
U17-11

R21

U17-10

U17-9

FIND NO.	ELEC REF DES	NOMENCLATURE OR DESCRIPTION	QTY REQD	PART OR IDENTIFYING NO.	DRG REE	CODE	SHEET	SPECIFICATION OR MATERIAL
LIST OF MATERIAL								



ENGINEERING DIVISION
SILVER SPRING, MD. 20910
PREPARED: R.E.B. 6/2/78
CHECKED: R.L. LOWERY 6/9/78
DESIGN: R.A. HILBERG 5/8/78
APPROVED BY: [Signature]

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE
1A13W DARD C
WIND SPEED/GUST
SCHEMATIC
DATE: 6-9-78
DRAWING NO.: B701-DR022
SCALE: NONE
SHEET 1 OF 2



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

W/OTS141: WDH

July 29, 1986

TO: All NWS Regional Headquarters, Area Electronics Supervisors, and
Electronics Technicians (EH3-8 Distribution)

FROM: W/OTS1 - J. Michael St. Clair *J. M. St. Clair*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 86-7

1. Material Transmitted:

Engineering Handbook No. 8, Surface Equipment, Section 3.2; Wind Modification No. 3, Errata No. 2.

2. Summary:

A clarification of the DARDC/F420 wind system calibration procedure is provided. Insert the attached errata sheet with the original modification note.

3. Effect on Other Instructions:

None.

EHB-13
Issuance 86-7



Engineering Division
W/OTS14

ERRATA SHEET NO. 2 TO WIND
MODIFICATION NO. 3

There apparently is some misunderstanding concerning the way the DARDC Wind Retrofit was to be configured. The calibration is done with the DARDC connected to the F420 C/D Wind Transmitters only. Wind meters are not to be connected to this system. If you connect a wind speed meter to this system you will load the DARDC resulting in about an 8 percent error, even though the wind speed meter will read correctly.

Wind Modification No. 3 provides instructions for the DARDC Wind Retrofit. It is not intended that the F420 C/D Wind Speed Meter be used in the DARDC system. Local display of wind data at DARDC wind sites could be used inappropriately, creating liability problems.

<i>Issue Date</i>	<i>Org. Code</i>
3-19-90	W/OS032

NATIONAL WEATHER SERVICE

Engineering Handbook

<i>Program</i>	<i>Part</i>	<i>Section</i>
EHB-8	03	3.3

MODIFICATION INDEX - RADIATION EQUIPMENT

<u>Number</u>	<u>Date of Issue</u>	<u>Title</u>
3	January 31, 1979	Ventilation of the Pyranometer Dome to Inhibit Dew, Frost, and Snow Accumulation.

Items 1, 2, and 4 have been deleted.

Engineering Division
W5141

SOLAR RADIATION MODIFICATION No. 3
(For Electronics Technicians)

SUBJECT : Pyranometer Air Float System

PURPOSE : Ventilation of the Pyranometer Dome to Inhibit Dew, Frost,
and Snow Accumulation.

EQUIPMENT AFFECTED : All Pyranometers

PARTS PROVIDED : Air Pump - Thomas 907CA18
Nipple, 1/4 x 18 NPT
Air Pump Housing
1/4 inch plastic tubing
Ventilation Ring, 1/8 inch copper tubing
Ring Clamps
Screws, 6-32 x 5/8 BH. 8x3/4 SM, 10 x 1 SM,
10-24 x 1/2 BH

TIME REQUIRED : 1-1/2 Work hours

PROCEDURE:

1. Remove the top from air pump housing by removing the four sheet metal screws securing it.
2. Remove end panel (with the lower hole and slot), from the air pump housing.
3. Mount air pump in the housing with the furnished 10-24 x 1/2 binding head screws. The exhaust port should face towards other end of the housing.
4. Feed ac power cord of the pump through end panel removed in Step 2.
5. Insure that the 1/4 x 18 NPT nipple is installed in the exhaust port of the pump.
6. Feed the 1/4-inch plastic tubing through grommet in the end cover of the tubing to nipple of the pump.
7. Reinstall top of the air pump housing, previously removed in Step 1.
8. Mount the air pump housing below or near the pyranometer using the 10 x 1 sheet metal screws provided.

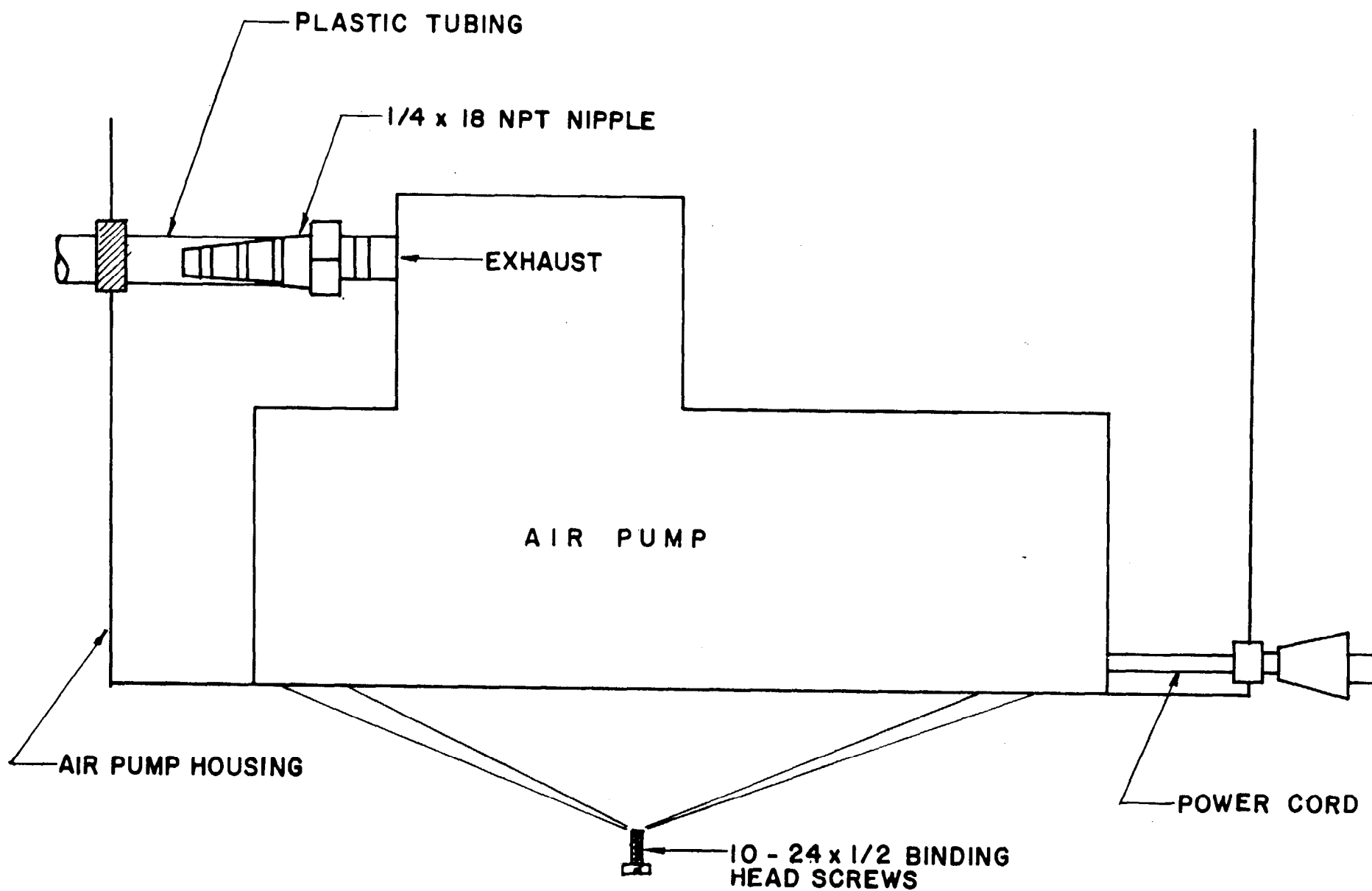
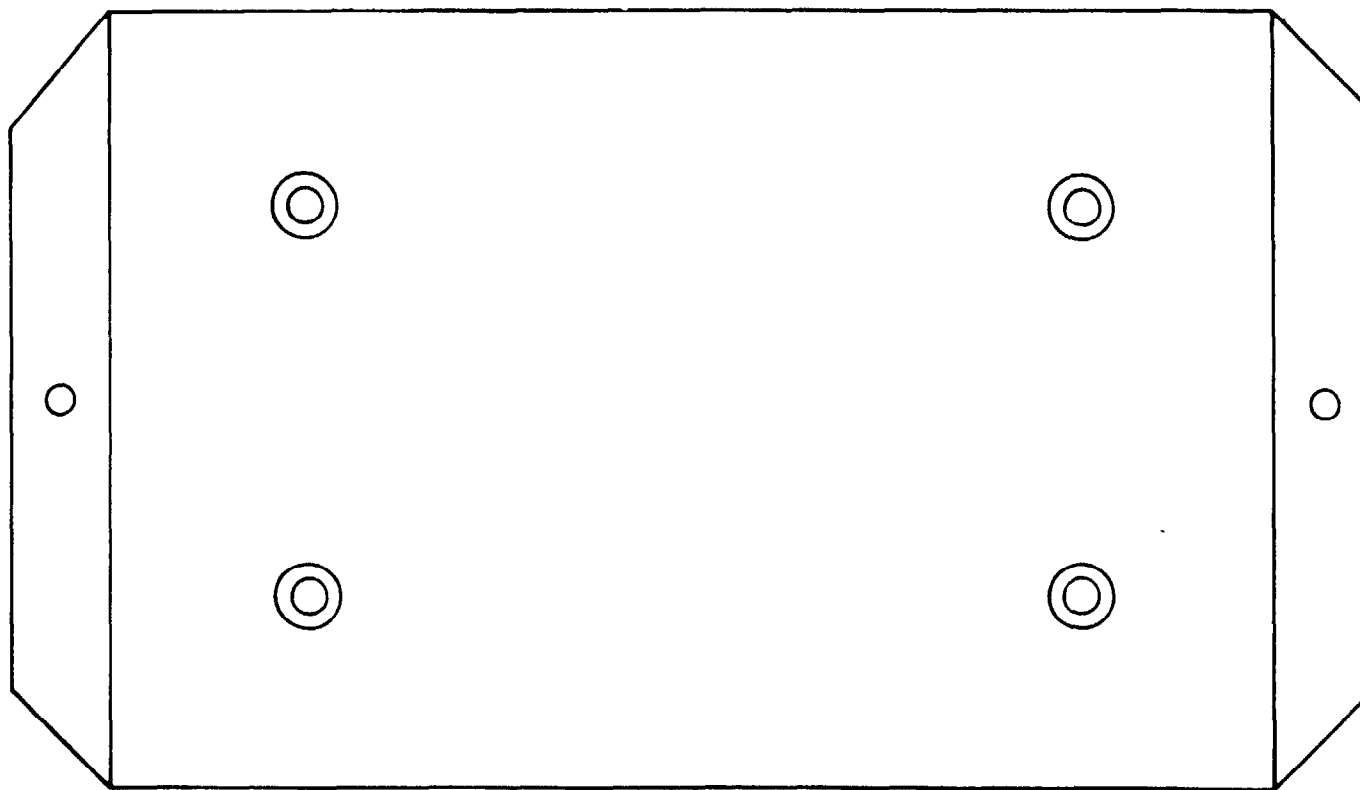


FIGURE 1



BOTTOM

F I G U R E 2

PYRANOMETER VENTILLATION RING

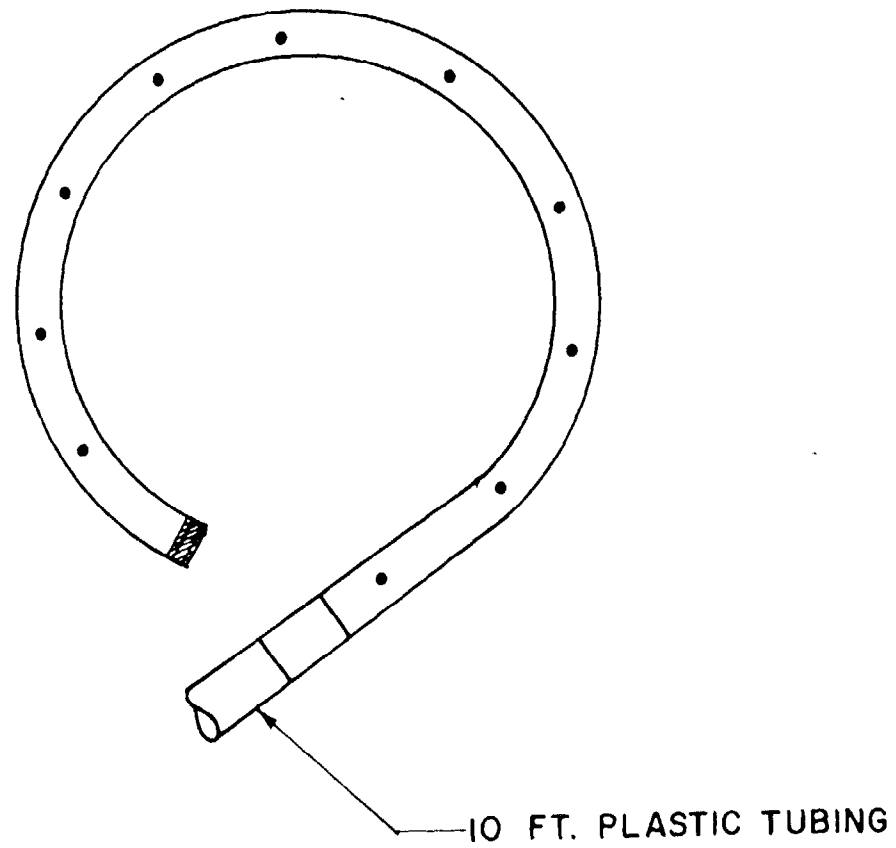
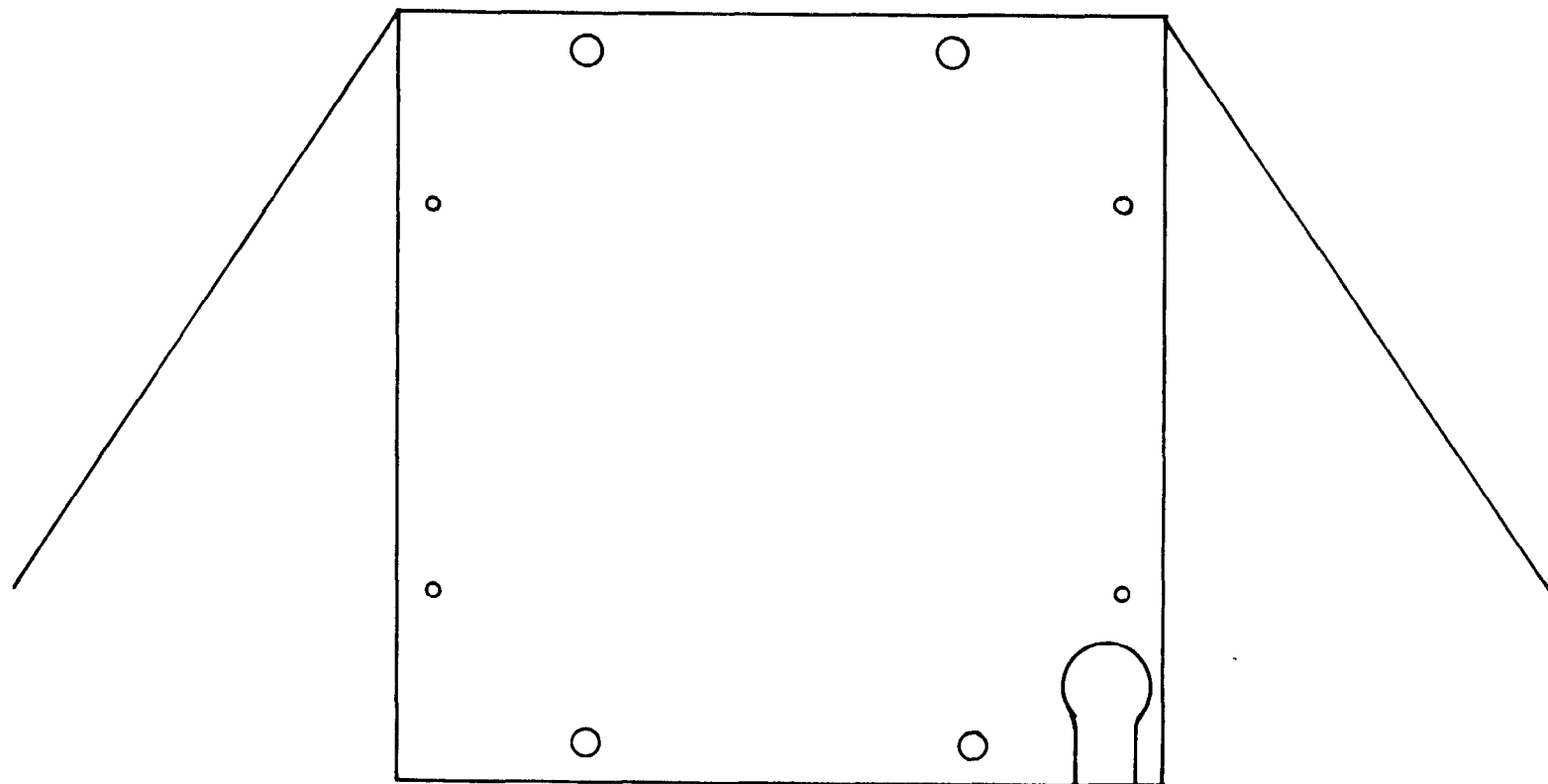
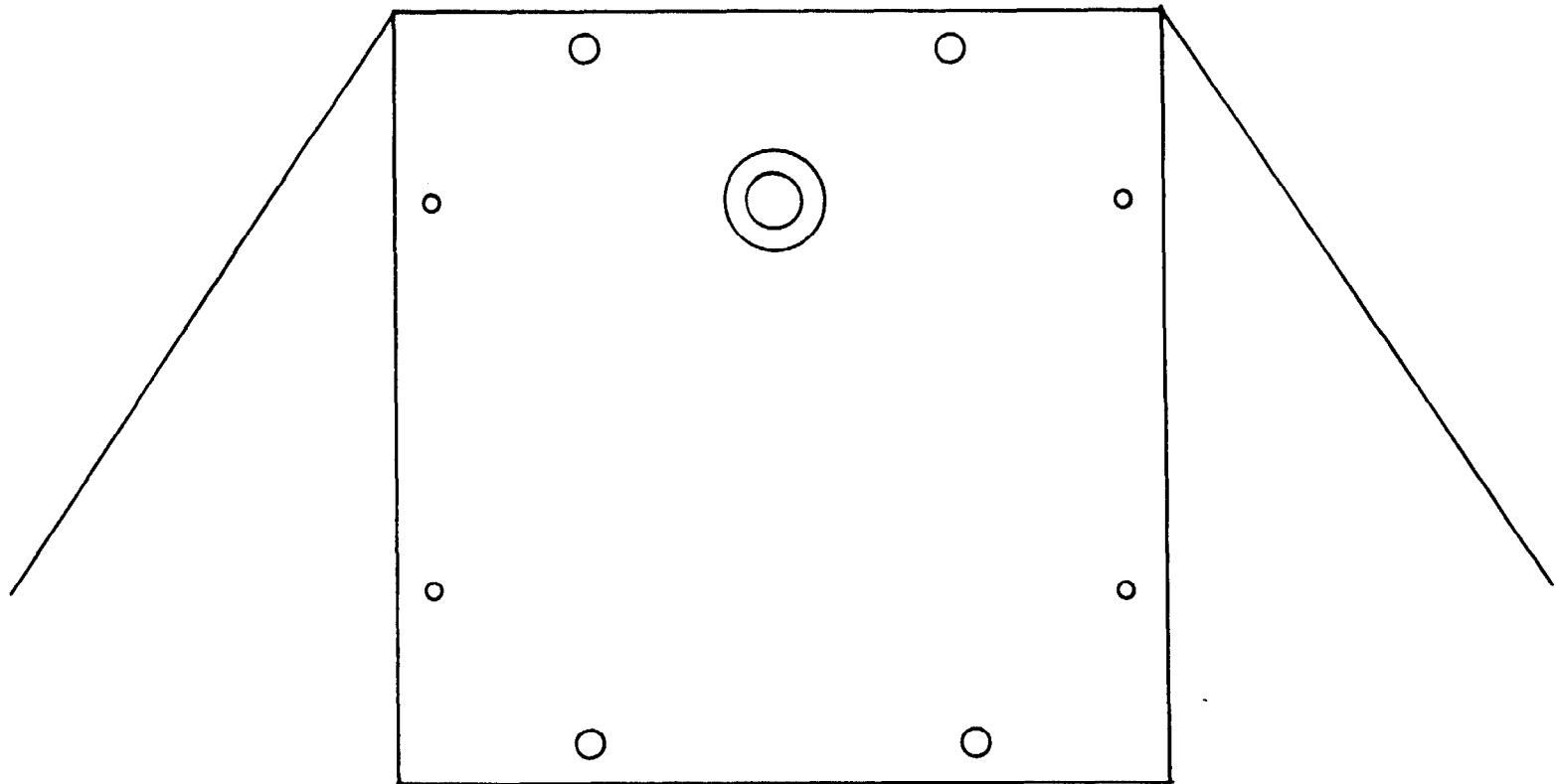


FIGURE 3



END

FIGURE 4



END

FIGURE 5

INSTRUCTIONS FOR REPORTING EQUIPMENT MODIFICATIONS

Report the completion of all equipment modifications on an H-28 form as illustrated below. Send the completed original to Engineering Data Analysis Branch, W511, 8060 13th Street, Silver Spring, Maryland 20910, and a copy to the AES for the area. Write your name in Block 7 and leave the remainder of the top line blank.

For each equipment modified, fill in one line of the form according to the block-by-block instructions listed below.

1. O R G		2. PAY PERIOD (Last day)			3. STATION		4. AREA SECTOR		5. INITIALS		6. HOURLY SALARY		7. REPORTED BY:		8. GENERAL PURPOSE		WS FORM H-28 17-73		U.S. DEPARTMENT OF COMMERCE NATIONAL WEATHER SERVICE		
		YEAR	MONTH	DAY	REG.														ENGINEERING PROGRESS REPORT		
9. STATION		10. AREA SECT.		11. CATEGORY PROGRAM		12. WORK TYPE		13. TOTAL - TIME (Hours)				14. TRAVEL MILES		15. PER DIEM COST PER HOUR CODE		16. 17. COST (Dollars)		18. ORDER NUMBER		19. NOTES	
1A		LAXC244		AHOST		MOD		2												SN:056,770901,#2	
1B		FAT		AHOST		MOD		3												SN:75-025,77092,#2	
1C																				BEAR MOUNTAIN	
1D																					
1E																					
1F																					
1G																					
1H																					

Block 9. Station identifier and region. See Engineering Handbook No. 4 (EHB-4), Appendix B, for a list of station locations and identifiers. (Copies of EHB-4 may be requested from Central Logistics Supply Center). Not every location has been assigned an identifier. Some equipments are reported under a larger station. The AHOST at Bear Mountain in the above example is listed in the equipment inventory under Fresno/FAT. Thus, "FAT" is the correct entry for Block 9. The actual location is reported in Block 19;

Block 10. Area.

Block 11. Equipment Code. See EHB-4, Appendix C. for codes and descriptions.

Block 12. The letters "MOD."

Block 13d. (Labeled "MT" on new forms, "CT" on old forms). Number of hours needed to complete the modification.

Block 19. Equipment serial number (as listed in equipment inventory), date modification was completed, modification number, and equipment location. The equipment location may be omitted if it's the same as the location indicated in Block 19.

If you are unsure of the correct station identifier, equipment code, or serial number to use, contact the AES for the area.

<i>Issue Date</i>	<i>Org. Code</i>
3-19-90	W/OS032

NATIONAL WEATHER SERVICE

Engineering Handbook

<i>Program</i>	<i>Part</i>	<i>Section</i>
EHB-8	03	3.4

MODIFICATION INDEX - H083 HYGROTHERMOMETER SYSTEM

<u>Number</u>	<u>Date of Issue</u>	<u>Title</u>
1	October 9, 1985	Display Conversion from Celsius to Fahrenheit
2	August 21, 1985	Addition of Autobalance Module
3	September 3, 1985	Transmit Logic Reset Circuit
4	July 15, 1986	Hygrothermometer Transmitter Sun Shield
5	April 16, 1986	Aspirator Fan Insect Barrier
6	September 22, 1986	Aspirator Removal Handle
7	April 3, 1989	Addition of Metal Oxide Varistors



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

October 22, 1985

W/OTS13 - CR

TO: All NWS Regional Headquarters, Area Electronics Supervisors,
and Electronics Technicians (EHB-8 Distribution)

FROM: W/OTS1 - J. Michael St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8 Issuance 85- 4

1. Material Transmitted:

Engineering Handbook No. 8, Surface Equipment, Section ^{3.4}~~3.8~~,
Hygrothermometer (H083), Modification Note 1: Display Conversion from
Celsius to Fahrenheit.

2. Summary:

Modification Note 1 provides instructions to convert the front panel
display from Celsius to Fahrenheit degrees.

3. Effect on Other Instructions:

None.

4. Certification Statement:

This modification has been successfully tested at the Operational Systems
Engineering Branch Laboratory for operational *integrity.

5. Reporting Modification to WSH Engineering Division:

Target date for reporting of this modification is Nov. 15, 1985.

All completed equipment modifications shall be reported on the Form H-28,
Engineering Progress Report, according to instructions contained in EHB-4,
Part 2 (see attached exhibit).

EHB-8
Issuance 85-4



Engineering Division
W/OTS14

H083 MODIFICATION NOTE 1
(For Electronics Technicians)

SUBJECT : Display Conversion from Celsius to Fahrenheit

PURPOSE : To convert Celsius reading on display to Fahrenheit

EQUIPMENT AFFECTED : All H083 Hygrothermometers, Serial Numbers 5-46, 50. After these units have been modified, all following units will be modified by and at the factory.

PARTS REQUIRED : KIT; modification. Components consisting of the following:

- 1 front panel
- 2 chassis lock spring nuts
- 1 error LED spring nut
- 2 1K, 1/4W, 5% carbon resistor (R23)
- 5 cable ties

MOD PROCUREMENT : The modification kit will be forwarded to field sites directly from the factory.

SPECIAL TOOLS : None

REQUIRED

TEST EQUIPMENT : None

REQUIRED

TIME REQUIRED : 2 Work Hours

General:

This modification converts the display unit of the H0-83 Hygrothermometer System to display the four temperatures (Ta, Td, Tmax, and Tmin) in degrees Fahrenheit rather than degrees Celsius in the normal mode of operation.

Procedure:

Steps 1 through 36 should be accomplished in completing this modification.

EHB- 8
Issuance 85- 4
10- 22- 85

2. Remove the display unit from the equipment rack and place it in a convenient work area.
3. Remove the eight 4-40 nuts and #4 nylon washers from the rear of the four numeric display PC boards.
4. Remove the four numeric display PC boards from the display unit and set aside.
5. Remove the eight 4-40 nylon washers from the display bezel mounting studs, then loosen the eight (8) 4-40 nuts and rotate the retainers 180 degrees. Remove the four display bezels and set aside.
6. Carefully pry up and cut the spring nuts from the rear of the display unit chassis locks. Use a 6" or 7-1/2" diagonal cutter for this task. Set the chassis locks aside and discard the spring nuts.
7. Unsolder the two wires from the rear of the error LED assembly.
8. Carefully pry and cut the spring nut from the error LED assembly and discard. Retain the error LED assembly for reinstallation.
9. Remove the knob from the DISPLAY DIM/BRIGHT control and set aside.
10. Remove the retaining nuts and lockwashers from the PRESS CELSIUS, DISPLAY TEST, DISPLAY DIM/BRIGHT and RESET MAX/MIN controls and set aside.
11. Remove the four controls listed above from the rear of the front panel and lay in a convenient location on the display motherboard.
12. Remove the six 6-32 screws, nuts and washers which retain the front panel to the chassis assembly and set aside.
13. Remove the front panel and set aside.
14. Locate the black wire connecting terminal 2 of the PRESS CELSIUS switch with the DISPLAY TEST switch, and remove it from the DISPLAY TEST switch terminal. It may be necessary to remove several of the cable ties to trace this wire. For convenience, this wire may be cut rather than unsoldered provided that it is cut close to the DISPLAY TEST switch terminal.

15. Remove the shrinkable tubing from the DISPLAY DIM/BRIGHT control terminal 2, having a white/brown/yellow wire attached. Solder the black wire removed in step 14 to terminal 2 of the DISPLAY DIM/BRIGHT control together with the white/brown/yellow wire.
16. Install the new front panel with the hardware removed in step 12.

NOTE: For ease of assembly, leave the mounting hardware loose until all six sets of hardware have been installed, then secure.
17. Reinstall the four controls removed in step 10, being careful not to mar the front panel when tightening the retaining hardware.
18. Reinstall the error LED from the front of the panel and secure using the new spring lock provided.
19. Install the chassis locks on the front of the panel and secure with the new spring nuts provided.
20. Rotate the DISPLAY DIM/BRIGHT control to the full CCW position and install the knob with the arrow pointing at the D of DISPLAY.
21. Locate the wires unsoldered in Step 7. Solder the black/yellow wire to the silver colored terminal on the error LED assembly, and solder the sleeved bus wire to the copper colored terminal. Install new cable ties where necessary.
22. Install the four numeric display bezels on the front panel. Display retainer clamps should only be finger tightened, to prevent distortion of the bezel.
23. Install the eight #4 nylon washers, (removed in step 5) on the numeric display bezel mounting studs.
24. Install the four numeric display PC boards with hardware removed in step 3.
25. Turn the display unit so that the rear panel is facing you. Remove the receive logic PC board, with the ribbon cable still attached, and place it in position to install R23, 1000 ohm resistor, as shown in Figure 1. Install R23.
26. Carefully remove the designation C1 from the PC board by scraping with a sharp knife.

27. Inspect the resistor installation carefully to ensure that there are no solder bridges or inadvertent short circuits. Reinstall the receive logic PC board in the display unit and install the display unit in the equipment rack.
28. Reconnect the AC power and the signal input connectors.
29. Remove the receive logic PC board from the spares kit and install the 1000 ohm resistor (R23) as described in steps 25 and 26.
30. Turn power on receiver. Ensure that the mode switch is in the "average" position.
31. Depress DISPLAY TEST switch and verify that all numeric display readouts indicate -188.8 degrees.
32. Vary the DISPLAY DIM/BRIGHT control throughout its range and verify that the displays vary in intensity from dim to bright.
33. Simultaneously depress the PRESS FAHRENHEIT switch and the RESET MAX/MIN switch and verify that the Ta, Tmax, and Tmin readouts all display the same information.
34. Error indicator will flash for 5 minutes until unit stabilizes.
36. Repeat test for spare receive logic PC board.
37. Package the old front panel and return to:

Technical Services Laboratory, Inc.
630 Lovejoy Road
Fort Walton Beach, FL 32548
Attn: Joe Boudreau

Instruction Manual Changes: None

1063-303

RECEIVE LOGIC

S/N _____

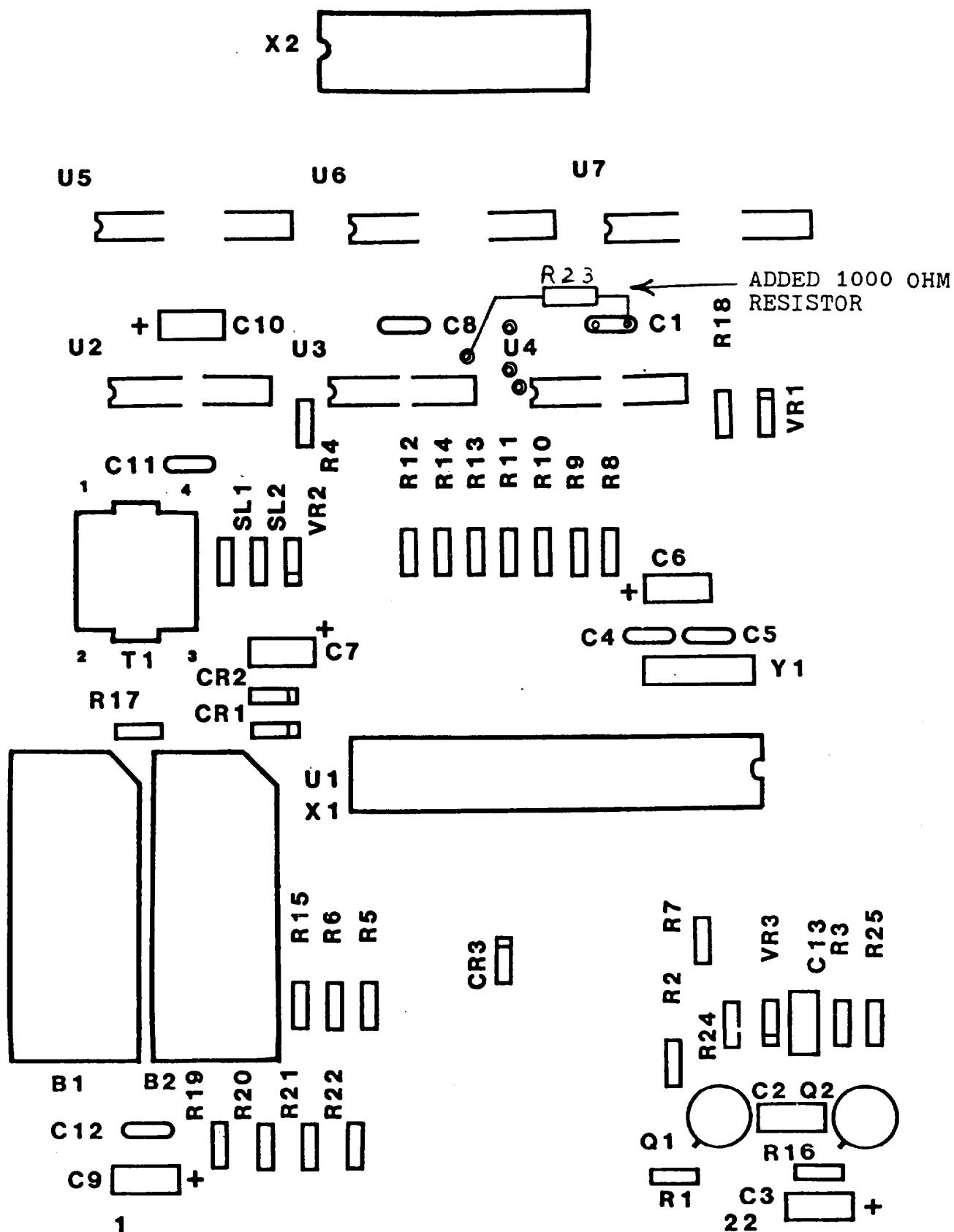


FIGURE 1



1-1 ARYON

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

September 4, 1985

W/OTS13 - CR

TO: All NWS Regional Headquarters, Area Electronics Supervisors,
and Electronics Technicians (EHB-8 Distribution)

FROM: W/OTS1 - J. Michael St. Clair *J. M. St. Clair*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 85- 2

1. Material Transmitted:

4

Engineering Handbook No. 8, Surface Equipment, Section **3.8**,
Hygrothermometer (H083) System, Modification Note 2: Addition of
Autobalance Module.

2. Summary:

Modification Note 2 provides instructions for installing the Autobalance Module.

3. Effect on Other Instructions:

None. Instructions will be provided in the H083 manuals at a later date.

4. Certification Statement:

This modification has been successfully tested at the Operational Systems Engineering Branch Laboratory for operation integrity.

5. Reporting Modification to WSH Engineering Division:

Target date for reporting of this modification is Sept. 20, 1985.

All completed equipment modifications shall be reported on the Form H-28, Engineering Progress Report, according to instructions contained in EHB-4, Part 2 (see attached exhibit).

EHB-8
Issuance 85-2



H083 MODIFICATION NOTE 2
(For Electronics Technicians)

SUBJECT : Addition of Autobalance Module
PURPOSE : To decrease required routine maintenance
EQUIPMENT AFFECTED : H083 Hygrothermometers, Serial Numbers 7-184
PARTS REQUIRED : 1 Autobalance Module
MOD PROCUREMENT : Autobalance module will be sent to all H083 sites
SPECIAL TOOLS : None
REQUIRED
TEST EQUIPMENT : None
REQUIRED
TIME REQUIRED : 1/2 Work Hour

General:

This modification decreases the required mirror maintenance on the H083. Procedure described in Instruction Manual Volume 1, Section 4, must be performed to complete this modification. This modification will have to be implemented on system serial no. 7 through 184.

Procedure:

Steps 1 through 7 should be accomplished in completing this modification.

1. Open transmitter door and switch power off.
2. Remove two screws at the upper end of the transmitter control panel (see Figure 1).
3. Carefully install the Autobalance Module, as illustrated in Figure 2. Plug Autobalance Cable into 52, and secure plug with the locking hardware provided.
4. Manually turn the Autobalance Dial ccw to 000.

5. Turn power ON and calibrate transmitter, per Volume 1, Section 4, of the Hygrothermometer Instruction Manual (H083) 8-406. This calibration is necessary prior to installation because the autobalance module wants to reference and balance to 000 position. Proper adjustments of the optic sensor amplifier gains (Si and Sd) can be made only when the mirror is clean and dry. If the above condition is not met the system may become inoperative.
6. The Autobalance is now ready to be activated and tested for functional operation. This activation is accomplished by using a 24" mini test lead. Connect one end of the test lead to case ground and momentarily touch the other end of the test lead to the left end of R39 on the transmit logic board, Figure 1. Caution, do not connect test lead to R39 first and then ground the lead, as the antenna effect of the open lead will probably stall the microprocessor. If stall occurs, turn power off and then back on and begin at Step 6. Ten seconds after grounding R39 the mirror temperature will begin to rise rapidly, as indicated by the dewpoint temperature readout. Mirror heating will last exactly 5 minutes, at which time the servo potentiometer dial will move and balance. After 15 seconds the Motor Servo Control will be disabled, and the system will seek the dew point. During the entire cycle of 5 minutes and 15 seconds, plus an additional 8 minutes for restabilization, the system will display the dew point.
7. To set the daily heating/balancing action cycle to a convenient time, simply turn off the transmitter AC power momentarily 12 hours before the desired time. For example, if the transmitter AC power is interrupted at noon, the Autobalance system will be set to make its heating/balancing action at midnight. If no power interruption occurs after this time the system will heat and balance every 24 hours.

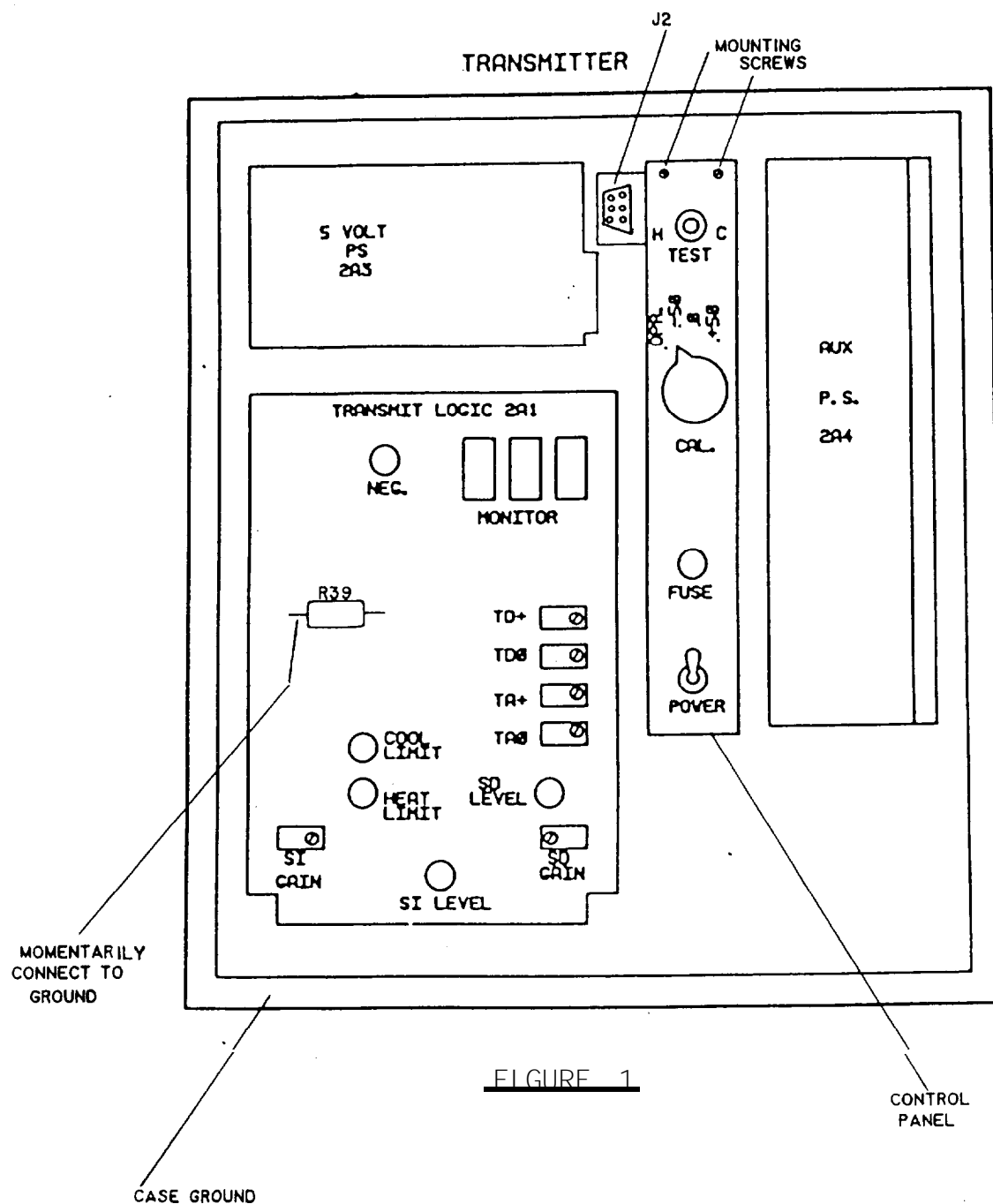


FIGURE 1

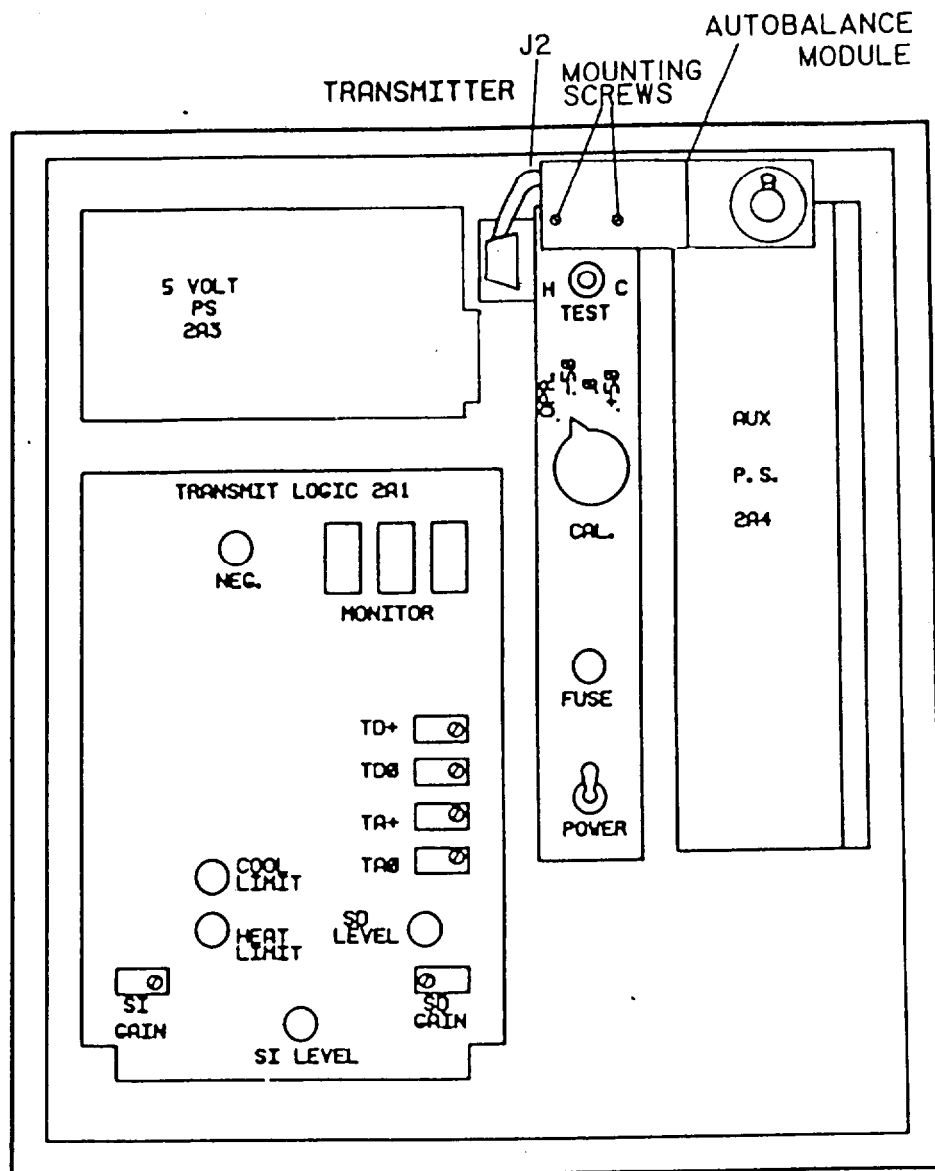


FIGURE 2

H083 MODIFICATION NOTE 3
(For Electronics Technicians)

SUBJECT : Transmit Logic Reset Circuit

PURPOSE : To prevent system lockup from power dropouts

EQUIPMENT AFFECTED : H083 Hygrothermometers, Serial Numbers 7-184

PARTS REQUIRED : 1 301K, 1% Resistor
1 165K, 1% Resistor
1 .1 uF capacitor
1 2" L 1/16 diameter shrink tubing

MOD PROCUREMENT : Parts will be sent to all H083 sites.

SPECIAL TOOLS : None
REQUIRED

TEST EQUIPMENT : None
REQUIRED

TIME REQUIRED : 1 Work Hour

General:

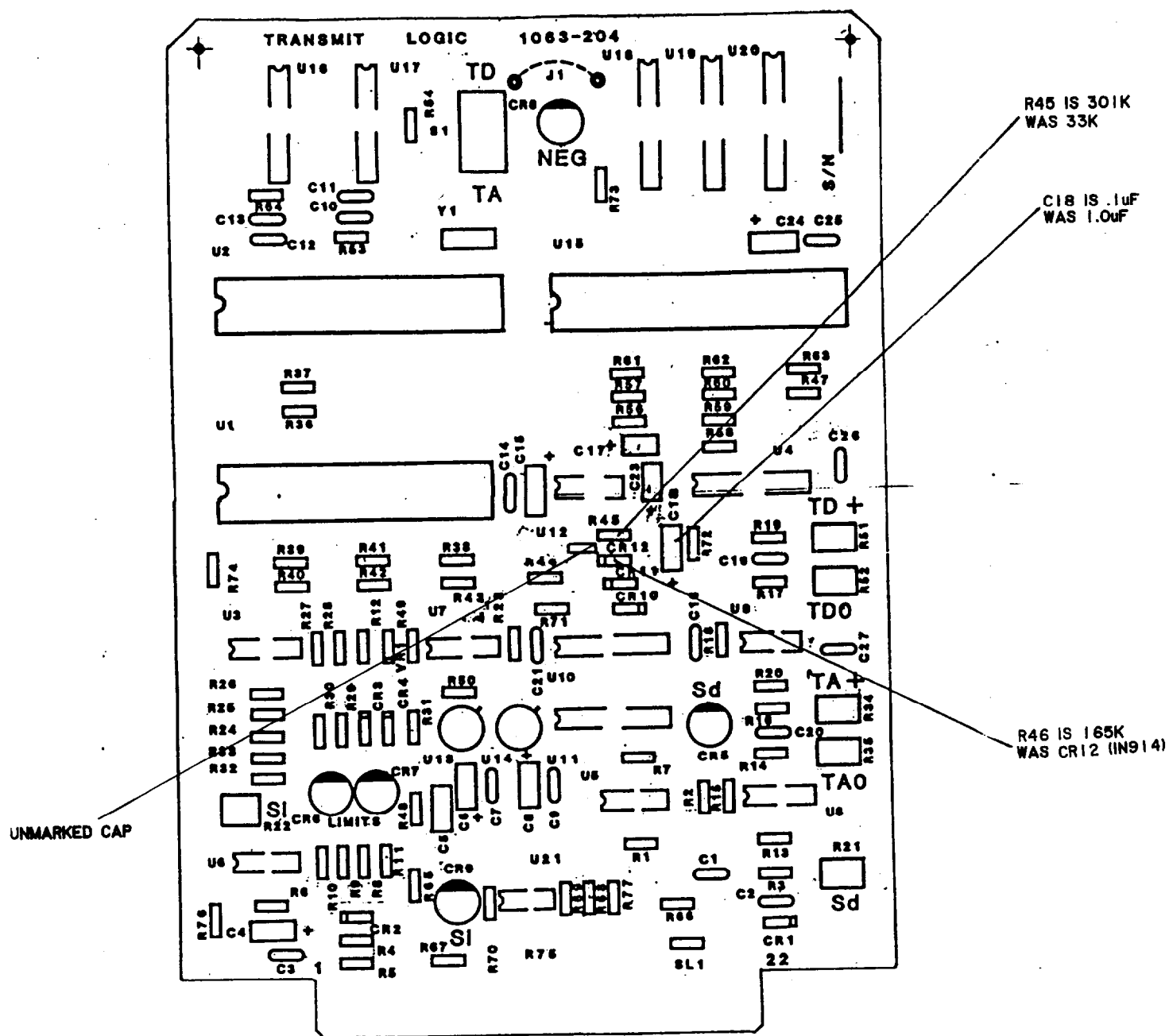
This modification is implemented to prevent system lockup due to power line voltage sag. The sag is between 10-30 milliseconds. This modification will have to be implemented on system serial no. 7 through 184.

Procedure:

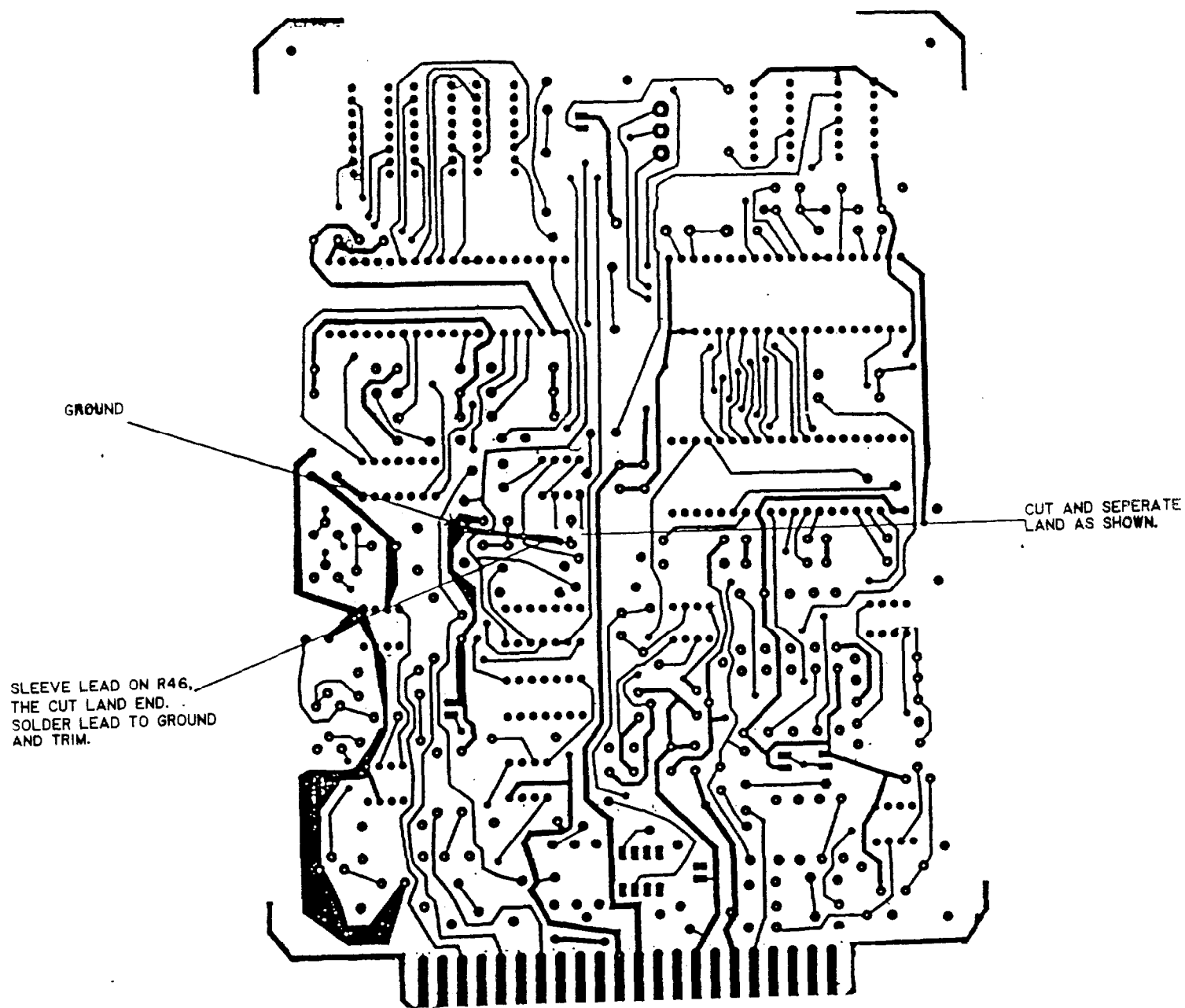
Steps 1 through 9 should be accomplished in completing this modification.

1. Remove the transmitter logic board from the spares kit and unsolder and remove R45, C18, and CR12. See Figure 1.
2. Position transmit logic board with component side up on work bench and locate an unidentified capacitor, located between R45 and CR12. Turn board over and locate the leads to this capacitor. Between these leads will be found a land that will have to be cut and separated. See Figure 2. Cut and separate the land.

3. Mount, solder, and trim R45, the 301K resistor. See Figure 1.
4. Mount and solder R46 (165K) in the CR12 position. Bend and position the lead of R46 from the cut land to ground. Use insulating sleeving over this lead of R46. Trim sleeving over the ground and solder and trim lead to ground. See Figure 2.
5. Trim the other side of R46.
6. Mount, solder, and trim C18, the .1 UF capacitor. See Figure 1.
7. Exchange the modified spare transmit logic board with the field site logic board and verify operational system functions.
8. If modified spare board is working properly in system, return to shop with unmodified transmit logic board. Modify field transmit logic board per steps 2 through 7.
9. Place modified transmit logic board in spares kit.



COMPONENT SIDE OF TRANSMIT LOGIC BOARD



BACK SIDE OF TRANSMIT LOGIC BOARD



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver, Spring, Md. 20910

September 3, 1985

W/OTS13 - CR

TO: All NWS Regional Headquarters, Area Electronics Supervisors,
and Electronics Technicians (EHB-8 Distribution)

FROM: W/OTS1 - J. Michael St. Clair *J. M. St. Clair*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 85-1

1. Material Transmitted:

Engineering Handbook No. 8, Surface Equipment, Section ^{3.4}~~3.8~~, Hygro-
thermometer (H083) System, Modification Note 3: Transmit Logic Reset
Circuit.

2. Summary:

Modification Note 3 provides instructions for components change.

3. Effect on Other Instructions:

None. Instructions will be provided in the H083 manuals at a later date.

4. Certification Statement:

This modification has been successfully tested at the Operational Systems
Engineering Branch Laboratory for operation integrity.

5. Reporting Modification to WSH Engineering Division:

Target date for reporting of this modification is Sept. 20, 1985.

All completed equipment modifications shall be reported on the Form H-28,
Engineering Progress Report, according to instructions contained in EHB-4,
Part 2 (see attached exhibit).

EHB-8
Issuance 85-1





U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

July 15, 1986

W/OTS141 - WDH

TO: All NWS Regional Headquarters, Area Electronics Supervisors,
and Electronics Technicians (EHB-8 Distribution)

FROM: W/OTS1 - J. Michael St. Clair, *J. M. St. Clair*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 86-5

1. Material Transmitted:

Engineering Handbook No. 8, Surface Equipment, Section ^{3.4}~~3.8~~, Hygro-
thermometer (H083) System, Modification Note 4: Hygrothermometer
Transmitter Sun Shield.

2. Summary:

Modification Note 4 provides instructions for installation of the H083 sun
shield.

3. Effect on Other Instructions:

Pen-and-ink changes to H083 Instruction Manual Appendix Parts List,
Volume 2.

4. Certification Statement:

This modification has been successfully tested at the Operational Systems
Engineering Branch Laboratory for operational integrity.

5. Reporting Modification to WSH Engineering Division:

Target date for reporting of this modification is July 16, 1986.

All completed equipment modifications shall be reported on WS Form H-28,
Engineering Progress Report, according to instructions contained in EHB-4,
Part 2 (see attached exhibit).

EHB-8
Issuance 86- 5



H083 MODIFICATION NOTE 4
(For Electronics Technicians)

S U B J E C T : Hygrothermometer Transmitter Sun Shield

P U R P O S E : To reduce the operating temperature inside the transmitter enclosure due to direct sun radiation

EQUIPMENT AFFECTED : All H083 Transmitter Enclosures

PARTS REQUIRED : 1 - 13" square by 16" stainless steel sun shield
4 - stainless steel hex standoff threaded for 10-32
4 - stainless steel pan head 10-32 screws
4 - stainless steel No. 10 lock washers

MOD PROCUREMENT : Parts will be sent to all H083 sites

SPECIAL TOOLS : None
REQUIRED

TEST EQUIPMENT : None
REQUIRED

TIME REQUIRED : 1 work hour

General:

This modification is designed to increase the reliability of the H083 by decreasing the internal operating temperature of the transmitter enclosure.

Procedure:

Steps 1 through 4 should be followed to accomplish this modification.

1. Remove the four 10-32 nuts from the sides of the transmitter enclosure holding the aspirator struts in place, one nut at a time and replace them with the hex standoffs.
2. Slip the sun shield into place with the short overhang towards the front (side with door) of the transmitter enclosure.

3. Line up the sun shield mounting holes with the standoffs, and insert and tighten the 10-32 panhead screws provided with the lockwashers attached.
4. Loosen transmitter box mounting bolts and orient transmitter box with the back towards due south.

Instruction Manual Changes:

Modify Appendix Parts List, Volume 2 as described below.

1. Transmitter Unit, page C5: Insert the following additions below the last line item.

31	N/A	1	Sun Shield	H083-SD001	AWS, Inc.	1
----	-----	---	------------	------------	-----------	---



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

April 16, 1986

W/OTS141 - WDH

TO: All NWS Regional Headquarters, Area Electronics Supervisors,
and Electronics Technicians (EHB-8 Distribution)

FROM: W/OTS1 - J. Michael St. Clair

J. M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 86-3

1. Material Transmitted:

Engineering Handbook No. 8, Surface Equipment, Section ~~3.3~~^{3.4},
Hygrothermometer (H083) System, Modification Note 5: Aspirator Fan Insect
Barrier.

2. Summary:

Modification Note 5 provides instructions for installation of insect
barrier.

3. Effect on Other Instructions:

Pen and ink changes to manual.

4. Certification Statement:

This modification has been successfully tested at the Operational Systems
Engineering Branch Laboratory for operational integrity.

5. Reporting Modification to WSH Engineering Division:

Target date for reporting of this modification is May 1, 1986.

All completed equipment modifications shall be reported on the Form H-28,
Engineering Progress Report, according to instructions contained in EHB-4,
Part 2 (see attached exhibit).

EHB-8
Issuance 86-3



H083 MODIFICATION NOTE 5
(For Electronics Technicians)

SUBJECT : Aspirator Fan Insect Barrier

PURPOSE : To close 2 small openings around the aspirator fan, preventing insects from entering

EQUIPMENT AFFECTED : All H083 Aspirator Assemblies

PARTS REQUIRED : 1 - 4-1/4" Diameter Ring, Part No. H083-1B1-1

MOD PROCUREMENT : Parts will be sent to all H083 sites

SPECIAL TOOLS : None.

REQUIRED

TEST EQUIPMENT : None.

REQUIRED

TIME REQUIRED : Less than 1 work hour

General:

This modification is designed to reduce the number of insects entering the aspirator assembly.

Procedure:

Steps 1 through 6 should be followed to accomplish this modification.

1. Open transmitter door and switch AC power OFF.
2. Remove aspirated sensor assembly from shield.
3. Remove the 4 sets of fan mounting hardware, being careful not to allow fan to drop.
4. Install ring (insect barrier) on bottom of fan and reassemble. Check that fan turns freely.
5. Return sensor assembly to shield.
6. Restore power.

3.4

SECTION 2.3

H083 HYGROTHERMOMETER SYSTEM

Instruction Manual Changes

A. APPENDIX PARTS LIST VOLUME 2:

1. Aspirator unit Page C2: Insert the following additions below the
last line item. 31 N/A 1 Aspirator fan insect barrier H083-1B1-1
AWS, Inc. 1



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

September 22, 1986

W/OS0321 - WDH

TO All NWS Regional Headquarters, Area Electronics Supervisors, and
Electronics Technicians (EHB-8 Distribution)

FROM W/OS03 - J. Michael St. Clair *J. M. St. Clair*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 86-8

1. Material Transmitted:

Engineering Handbook No. 8, Surface Equipment, Section ~~3.8~~^{3.1},
Hygrothermometer (H083) System, Modification Note 6: Aspirator Removal
Handle.

2. Summary:

Modification Note 6 provides instructions for installation of removal
handle.

3. Effect on Other Instructions:

None.

4. Certification Statement:

This modification has been successfully tested at the Engineering Design
Branch Laboratory for operational integrity.

5. Reporting Modification to WSH Engineering Division:

Target date for reporting of this modification is 30 days after receipt.

All completed equipment modifications shall be reported on the form H-28,
Engineering Progress Report, according to instructions contained in EHB-4,
Part 2, using equipment code H083T.

EHB-8
Issuance 86-8



H083 MODIFICATION NOTE 6
(For Electronics Technicians)

SUBJECT: Aspirator Removal Handle

PURPOSE: To facilitate removal of the aspirator from its enclosure.

EQUIPMENT AFFECTED: All H083 Aspirator Assemblies

PARTS REQUIRED: 1 stainless steel handle 4 inches long, 2 inches high with 6-32 mounting studs.

MOD PROCUREMENT: Parts will be sent to all H083 sites.

SPECIAL TOOLS
REQUIRED: None

TEST EQUIPMENT
REQUIRED: None

TIME REQUIRED: Less than 1 work hour.

General

This modification is designed to make removal of the aspirator from its enclosure easier, since some aspirators have been found to fit more tightly than others.

Procedure

Steps 1 through 6 should be followed to accomplish this modification.

1. Open transmitter door and switch AC power off.
2. Remove aspirator sensor assembly from shield.
3. Remove 2 fan mounting screws diagonally across from each other.
4. Install stainless steel handle into these 2 holes, securing them with 6-32 hardware just removed.
5. Return aspirator assembly to shield.
6. Restore power.

H083 MODIFICATION NOTE 7
(for Electronics Technicians)

SUBJECT : Addition of Metal Oxide Varistors (MOV's)

PURPOSE : Enhance the lightning protection of the transmitter's AC input.

EQUIPMENT AFFECTED : H083T

PARTS REQUIRED : 3 MOV's, G.E. type V130LA10A

MOD PROCUREMENT : The above MOV is available from NLSC under Weather Service Stock No. 0175-V130LA10A (NSN 5905-00-255-9504)

SPECIAL TOOLS AND : None
TEST EQUIPMENT
REQUIRED

TIME REQUIRED : 1 work hour

EFFECT ON OTHER : None
INSTRUCTIONS

CERTIFICATION : This modification has been successfully tested at the
STATEMENT Engineering Design Branch laboratory for operational integrity.

General

The H083 Transmitter Assembly has been shown to be sensitive to lightning strikes in its present configuration. The addition of more MOV's should provide better protection; however, if this simple modification does not take care of the problem, additional and more expensive steps may be needed. According to EMRS data, many H083 transmitters are damaged when a nearby wind tower is hit. Systems that share a common ground rod and are in lightning-prone areas may have to be separated with their own ground rods.

Procedure

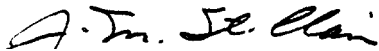
1. Remove power from the transmitter.
2. Locate the AC input terminal block 2TB1 in the lower right-hand side of the transmitter box.

3. Install MOV's from each side of the AC line to ground and one MOV across the line. Reference: schematic located in the H083 manual, volume 2, page 2-11. Use spade lugs for the MOV leads.
4. Restore power.

Reporting Modification

Target date for reporting this modification is 30 days after receipt.

All completed equipment modifications shall be reported on the WS Form H-28, Engineering Progress Report, according to instructions contained in EHB-4, part 2, using equipment code H083T.



J. Michael St. Clair
Chief, Engineering Division

<i>Issue Date</i>	<i>Org. Code</i>	NATIONAL WEATHER SERVICE	<i>Program</i>	<i>Part</i>	<i>Section</i>
10/17/97	W/OSO321	Engineering Handbook	EHB-8	03	3.5

MODIFICATION NOTE INDEX
LASER BEAM CEILOMETER

<u>Number</u>	<u>Date of Issue</u>	<u>Title</u>
1	September 24, 1989	Installation of New Receiver Board and Version 2.42 Software
2	September 17, 1992	Tropical Conversion Kit
3	July 25, 1995	Non-ASOS Laser Beam Ceilometer and Gifft Recorder Removal
Amendment 1	November 15, 1995	Amendment 1 to LBC Modification Note 3
Amendment 2	February 1996	Amendment 2 to LBC Modification Note 3
Amendment 3	April 18, 1996	Amendment 3 to LBC Modification Note 3
Amendment 4	May 6, 1996	Amendment 4 to LBC Modification Note 3
Amendment 5	June 4, 1996	Amendment 5 to LBC Modification Note 3
Amendment 6	August 9, 1996	Amendment 6 to LBC Modification Note 3
Amendment 7	October 17, 1996	Amendment 7 to LBC Modification Note 3
Amendment 8	December 18, 1996	Amendment 8 to LBC Modification Note 3
Amendment 9	March 13, 1997	Amendment 9 to LBC Modification Note 3
Amendment 11	September 8, 1997	Amendment 11 to LBC Modification Note 3
Amendment 12	October 15, 1997	Amendment 12 to LBC Modification Note 3

LASER BEAM CEILOMETER (LBC) MODIFICATION NOTE NO. 1

SUBJECT: : Installation of New Receiver Board and Version 2.42 Software

PURPOSE : Implements system improvements developed during break in production. Configures existing LBC's to be the same as current production LBC's.

EQUIPMENT AFFECTED : LBC's with the following serial numbers:

86-003 through 86-141
except 86-004
86-008
86-009
86-010
86-032
86-061
86-064
86-129
87-142 through 87-155
except 87-154

This list covers all LBC's shipped prior to August 1989.

PARTS REQUIRED :	<u>Quantity</u>	<u>Description</u>
	1	Receiver Board (CTR 13)
	1	EPROM with Version 2.42 software

MOD PROCUREMENT : The required parts will be mailed to each affected station by the LBC manufacturer, Vaisala, Inc.

SPECIAL TOOLS AND : Note the electrostatic discharge precautions before
TEST EQUIPMENT replacing EPROM
REQUIRED

EFFECT ON OTHER : None
INSTRUCTIONS

General

This modification implements system improvements developed during the break in production. The new receiver board provides receiver diode temperature compensation by on-board voltage regulation. This results in stable receiver sensitivity over temperature variations. The Version 2.42 software is the current production software.

Procedure

1. Installation

Follow instructions provided by Vaisala for installation of the CTR 13 Receiver Board and Version 2.42 software.

2. System Checkout

Verify LBC operation by performing Verification of Operation and Parameter Settings also provided by Vaisala.

During the performance of the Verification of Operation and Parameter Settings section of the instructions, set the device constant (DEV) to a value of 1.11. The device constant adjusts the LBC system for energy lost by transmission through the glass covers. Future plans include the use of a calibration hood that will provide a device constant unique to each LBC. Until that time, the device constant for all LBC's shipped prior to August 1989 will be kept set to 1.11. Note that LBC's shipped August 1989 or later have a device constant that is unique to that LBC and must be kept set at the value in the system documentation.

Please note the following:

- a. The new receiver board has a slightly different configuration than the old board.
- b. The CTH 12 Maintenance Terminal code for RAT is C32. This information is included in the manual but is not listed on the terminal.

Reporting Modification

Target date for completion of this modification is 30 days after receipt of parts. Modification completion shall be reported using established procedures.

After the modification is complete, obtain a log of the system parameter values (C4 command) and LLAS and FREQ values. Send the log and date of return of the replaced parts to:

NOAA/National Weather Service
Attention: Surface Program Engineer, W/OS031
8060 13th Street
Silver Spring, MD 20910

Equipment Disposition


Return the old receiver board and EPROM to the following address:

Vaisala, Inc.
Attention: Mr. Tony Perez
100 Commerce Way
Woburn, MA 01801

An address label has been provided by Vaisala.

If you have any problems or questions, contact the Surface Program Engineer, Max Christopher, through your regional headquarters.

Any comments or recommendations about the LBC are also welcome.


J. Michael St. Clair
Chief, Engineering Division

LBC MODIFICATION NOTE 2 (for Electronics Technicians)

Engineering Division

W/OS03: HD/BGM

SUBJECT : Tropical Conversion Kit

PURPOSE : Implements protection of laser beam ceilometer (LBC) receiver board from solar radiation.

EQUIPMENT AFFECTED: LBCs located between ± 30 degrees latitude (non-inclusive):

PARTS REQUIRED : Tropical conversion kit consisting of:

<u>Quantity</u>	<u>Description</u>
1	Tropical filter standoff
1	Tropical infrared filter
1	Tropical filter holder
3	Filter holder screws (M3x25)

MOD PROCUREMENT : The required parts are provided in the tropical conversion kit (K220-1MS2), which will be shipped to each affected station by the National Logistics Supply Center (NLSC).

SPECIAL TOOLS : 7 mm wrench (previously supplied with LBC)
REQUIRED

EFFECT ON OTHER : Make the following pen and ink changes to LBC
INSTRUCTIONS Technical Manual CT12K, rev. E:

1. Page 290, section 6.2.5, under "WARNING!" paragraph, add:
" - If receiver board has been modified to include the tropical conversion kit, remove board to check tropical filter for damage. Replace filter if damaged. Refer to Engineering Handbook No. 8, LBC Modification Note 2, Maintenance Procedures section. Observe commencement of normal operation."
2. Page 291, under "Replacement", add:
" - If receiver board has been modified to include the tropical conversion kit, see Maintenance Procedures section of LBC Mod. Note 2 in Engineering Handbook No. 8."

General

Some LBCs in tropical locations have experienced cracking of the receiver board filter. The failures are caused by the concentration of the solar energy into a small area that tracks across the filter at tropical latitudes. The resulting thermal gradients cause the filter to crack.

The tropical conversion kit implemented by this note prevents filter cracking. It provides a filter made of a more heat resistant material and it positions the filter closer to the receiver lens. The new filter location enlarges the area of concentrated solar energy thereby reducing the thermal gradients and eliminating the resultant filter failures.

Initial Kit Installation

1. Installation Procedure

Follow "Installation Instructions for CTR13B Tropical Receiver Board Upgrade Kit" provided by Vaisala, Inc.

Caution: Be careful not to damage the electronics on the bottom of the receiver board when following this procedure.

No changes in the system parameters are required.

2. Equipment Disposition

After modification is complete, dispose of the old filter holder, filter, and screws on site.

Maintenance Procedures

1. Replacing Receiver Board

If a modified receiver board with a tropical filter (labelled "CTR 13B") needs to be replaced, the entire tropical conversion kit should be removed from the failed receiver board and installed on the replacement receiver board. This is accomplished by first removing items 1, 2, 3, and the three M3x25 screws (see Drawing No. 4572) from the failed receiver. Second, remove items 1, 2, and 3 (see Attachment A) from the replacement receiver. Third, interchange these two groups of removed items and reinstall them on the receivers. At this time the replacement receiver with the tropical filter can be installed, and the failed receiver with the standard filter returned to the depot for repair.

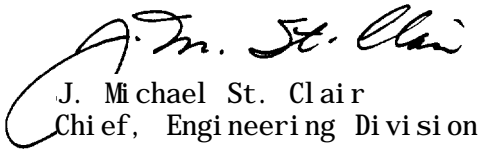
2. Replacing Tropical Filter Only

If the tropical filter (item 2, DWG 4572) becomes damaged, it can be replaced by ordering another tropical filter (ASN K220-1MS1) from NLSC without having to order the entire tropical conversion kit.

If you have any questions, please contact Hoan Dang (301-713-1845) through your regional headquarters. Any comment or recommendation about the LBC is also welcome.

Reporting Modification

Target date for completing this modification is 30 days after receipt of parts. Report completion on WS Form H-28 according to instructions in EHB-4, part 2, using equipment code LBC.



J. Michael St. Clair
Chief, Engineering Division

Attachments

INSTALLATION OF LBC TROPICAL CONVERSION KIT

This modification note is to be implemented at the following sites:

SOUTHERN REGION

SID LOCATION

DAB	Daytona Beach, FL
FLL	Fort Lauderdale, FL
FMY	Fort Myers, FL
MCO	Orlando, FL
MI A	Mi ami , FL
OPF	Mi ami , FL
ORL	Orlando, FL
PBI	West Palm Beach, FL
PIE	St Petersburg/Clearwater, FL
RSW	Fort Myers, FL
SPG	St Petersburg, FL
TMB	Mi ami , FL
TPA	Tampa, FL
MSY	New Orleans, LA
BPT	Beaumont/Port Arthur, TX
BR O	Brownsville, TX
CRP	Corpus Christi, TX
HOU	Houston, TX
IAH	Houston, TX
MFE	Mc Allen, TX
SAT	San Antonio, TX
SSF	San Antonio, TX
VCT	Victoria, TX
SJU	San Juan, PR
P66	Saint Croix, VI
STT	Charlotte Amalie, VI
STX	Christiansted, VI

PACIFIC REGION

SID LOCATION

HFO	Honol ul u, HI
ITO	Hi l o, HI
LIH	Li hue, HI
OGG	Kahul ui, HI

INSTALLATION INSTRUCTIONS FOR CTR13B TROPICAL RECEIVER BOARD
UPGRADE KIT
92/06/18

A.) REMOVAL OF THE RECEIVER BOARD

1. Disconnect the AC line cable from the CT12k.
2. Disconnect the window conditioner cable.
3. Remove the window conditioner cover.
4. Remove the equipment cover.
5. Remove the receiver board protective cover by removing the three nuts that hold it in place.
6. Disconnect the three cables from the receiver board.
7. Using a 7mm wrench, carefully remove the three nuts that hold the receiver board in place. Hold the receiver board in place while removing the last nut.

NOTE: When the three nuts are loose, the optics adjustment ring above the board is free to move. Make sure not to turn the ring as this would change the optical characteristics of the ceilometer.

8. Carefully let the receiver board slide out of its place. If the board seems to be locked in place, gently push down on the board by each of its edges, one at a time. DO NOT TRY TO PRY THE BOARD OFF by using a screwdriver, as this may permanently damage the optics assembly.

B.) UPGRADING THE RECEIVER BOARD

1. Remove the three screws on the holding ring.
2. Remove the holding ring and the old filter.
3. Set the standoff block, new filter and new holding ring up on the receiver block as shown in DWG 4572. Do not touch the filter on its face. The filter is mounted with the dark side in.
4. Use the long screws to tighten down the assembly.
5. Attach the "CTR13B" sticker to the standoff block.

C.) RE-INSTALLATION OF THE RECEIVER BOARD

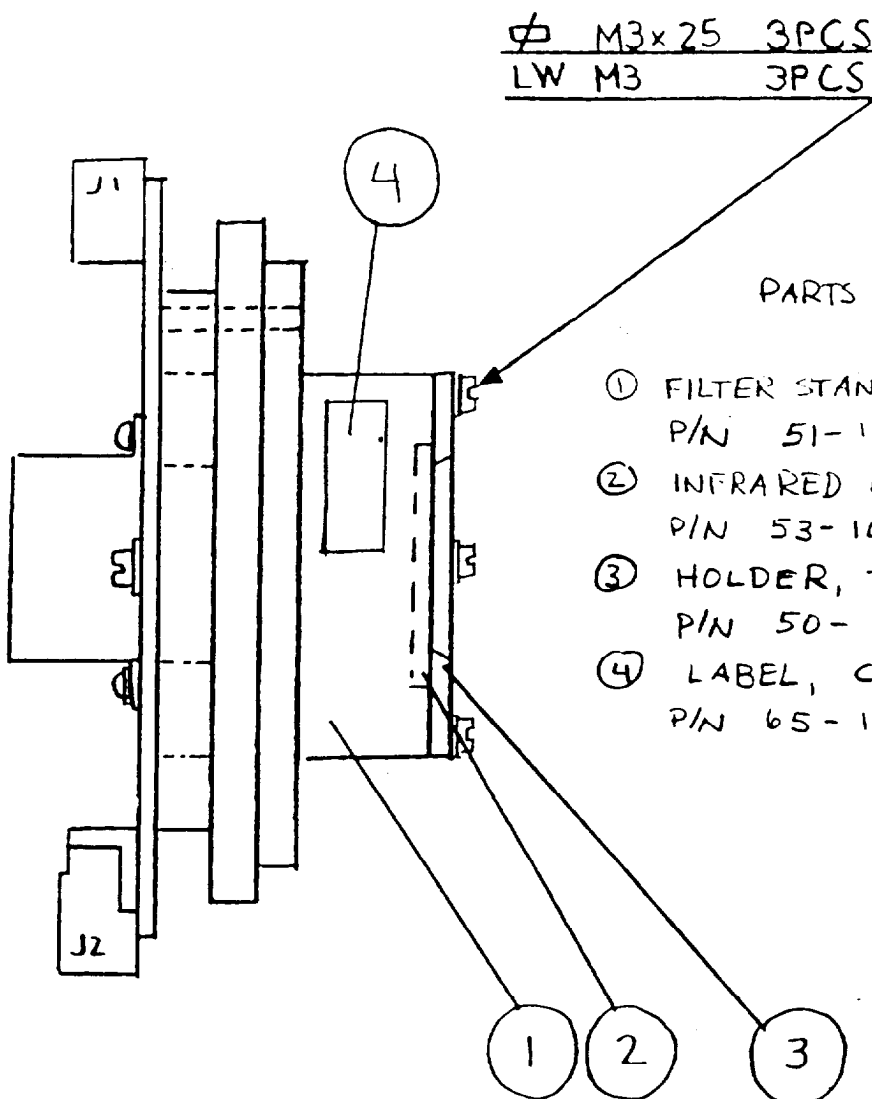
1. While standing on the receiver side of the ceilometer, rotate the receiver board so the connector J2 is on the left.

2. Carefully insert the receiver into its place and loosely mount the nuts to hold the receiver in place.

NOTE: When installing the receiver board make absolutely sure that the receiver block is fully seated into the optics adjustment ring. This can be verified by checking that the edge of the receiver block is parallel with the edge of optics adjustment ring. DO NOT FORCE THE BOARD IN PLACE by tightening the mounting nuts as this will damage the optics assembly.

3. After insuring that the receiver block is properly mounted, tighten the mounting nuts.
4. Re-connect the cable to the receiver board.
5. Re-install the receiver board protective cover. Make sure that none of the cables are pinched in the cover.
6. Make sure that both ceilometer power switches CB1 and CB2 are in the "ON" position.
7. Mount the equipment cover and the window conditioner cover.
8. Connect the window conditioner cable and the AC line cable.

Ltr	Qty	Description	Cause	1st serial no	Date	Drawn/Check
B	1	CORRECT LABEL PART NUMBER			1/31/91	SAR

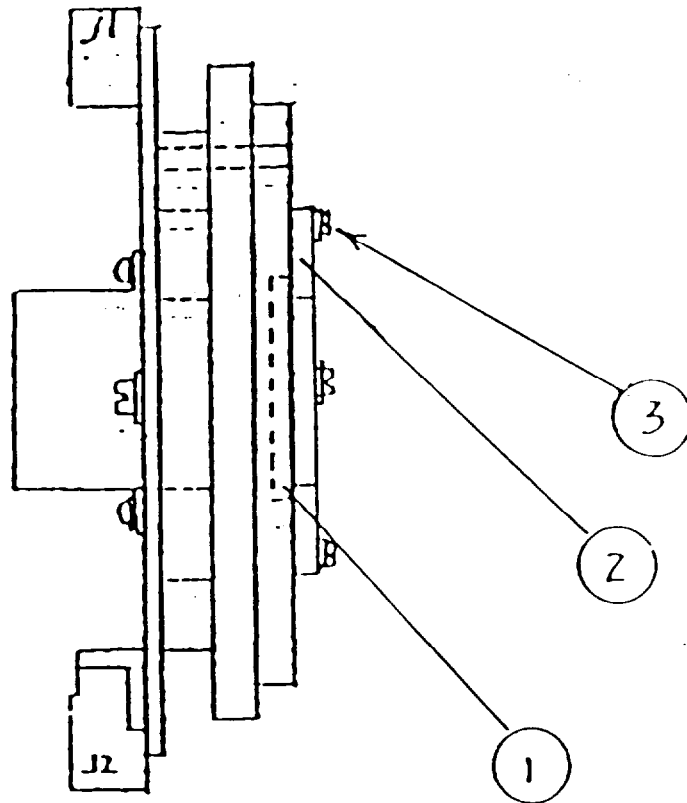


NOTE: 1. FILTER TO BE MOUNTED WITH DARK SIDE
TOWARDS BOARD AND BRIGHT SIDE VISIBLE
2. DO NOT TOUCH WITH BARE HANDS
EXCEPT AT EDGES!

Part	Title	Qty	Specification	Material	Preform Dimensions
Weight				Related	Parts List
Drawn SAR 12/90					
Check	Title CONVERSION KIT, TROPICAL RECEIVER P/N 98-20136				
Design				Dwg no 4572	
Replaces	Scale 1:1	Serial no			
Replaced by					

Rev C

Standard Receiver



- 1) Standard Infrared Filter
- 2) Standard Filter Holder
- 3) Standard Filter Screw

Engineering Division

W/OS0321 : FJZ

LBC MODIFICATION NOTE 3
(for Electronics Technicians)

SUBJECT : Non-ASOS Laser Beam Ceilometer and Gifft Recorder Removal

PURPOSE : To provide contractor retrofit of GFE LBC Ceilometers and restocking of Gifft Recorder.

EQUIPMENT AFFECTED: Non-ASOS K220 Ceilometers located at commissioned ASOS sites

PARTS REQUIRED : None

MOD PROCUREMENT : N/A

SPECIAL TOOLS : None
REQUIRED

TIME REQUIRED : 3 hours

EFFECT ON OTHER : None
INSTRUCTIONS

VERIFICATION : This modification was successfully tested at the WSO in
STATEMENT West Palm Beach, Florida.

GENERAL

This note provides procedures and instructions for deactivating and removing non-Automated Surface Observing System (ASOS) Laser Beam Ceilometers (LBC) at commissioned ASOS sites listed in Appendix A. Deactivation instructions of non ASOS LBCs for future commissioned ASOS sites will be provided to the field separately. The LBC and pedestal will be refurbished and used in future ASOS installations. Please disconnect the LBC and remove and return the Gifft recorders to the National Reconditioning Center (NRC) within 15 days after receipt of regional instructions. System deactivation is accomplished in accordance with WSOM Chapter H-50, WSOM Chapter A-76, WSOM Chapter A-34, and applicable EHB-4 directives.

PROCEDURE

A. Non-ASOS LBC Preremoval Instructions

Confirm that the station manager has accomplished the LBC and Gifft recorder deactivation activities. Get approval of the site MIC/OIC before starting the equipment removal process.

1. Locate the AC circuit breaker for the non-ASOS LBC.
2. Turn off the AC circuit breaker and **attach a warning sticker on the LBC circuit breaker to prevent reactivation of AC power.**
3. Locate non-ASOS LBC field site.
4. Remove the equipment cover and locate PSI (High Voltage Power Supply).
5. Switch CBI and CB2 to the off position.
6. Disconnect both the power and signal cabling from the unit (Canon plugs J1, J2, and J3). **Do not remove the LBC or any other associated hardware from its base. This will be done by the contractor.**



Verify with a voltmeter that AC voltages are absent between pins A and B on P1.

7. Cover cannon plugs J1, J2, and J3 with a plastic baggie and secure the open end with a waterproof tape to ensure a moisture tight seal.
8. If possible secure the excess cabling in an electrical conduit or other weather protective enclosure. Otherwise leave the cabling in place at the base of the concrete pad.

9. **Affix a warning label to the cabling to indicate that a potential electrical hazard exists.**
10. After disconnecting the LBC, fill out a Form H-14, Equipment Return Tag, as portrayed in Figure 1. Retain the two carbon copies and send one to the address shown in step E. Send the other copy to the regional ASOS specialist.

NOTE

Be aware that the carbon copies of Form H-14 need to be legible.

11. Tie the Form H-14 to the protection bar inside the LBC as shown in Figure 2.
12. Replace the equipment cover.
13. Call the AOMC at 1-800-242-8194 and notify the AOMC controller that the LBC is ready for pickup. Provide the AOMC with a phone number and a point-of-contact so that the contractor can call before picking up the LBC.

B. Gifft Recorder Preremoval Instructions

Confirm that the station manager has decommissioned the Gifft recorder and inform the office staff that you will be removing the Gifft recorder.

C. Gifft Recorder Removal and Packing Instructions

1. Turn the Gifft recorder power to the off position. Locate the power source for the Gifft recorder and unplug both the power and signal cabling for the unit.
2. Remove the Gifft recorder from the console, fill out a Form H-14, and send a copy to the Regional ASOS Specialist or EPM

D. A-26 Reporting Instructions

For commissioned sites, the target date for the completion of this modification is within 15 days after receipt of regional instructions to remove equipment. For other sites (FAA), the target date for completion is 20 days after receipt of regional instructions to remove equipment. Report the completed modification on WS Form A-26, Engineering Management Reporting System Maintenance Record, as depicted in Figure 3.

E. CD 509 Completion Instructions

Complete Form CD-509, Property Transaction Request, as shown in Figure 4. Leave the first page blank. On the second page complete the section named: "3. Transfer." Follow the instructions given in the blocks in Figure 5. Mail a copy of Form CD-509 along with a copy of Form H-14 to:

National Weather Service
1325 East West Hwy., Rm. 3408
Silver Spring, MD 20910

Attn: Franz J.G. Zichy

F. Summary of Paperwork Instructions

One carbon copy of Form CD-509 to the address specified in step E.

One carbon copy of Form H-14 of the removed non-ASOS LBC to the address specified in step E.

One carbon copy of Form H-14 of the removed non-ASOS LBC to the regional ASOS specialist or EPM

One carbon copy of Form H-14 of the removed Giffit recorder to the regional ASOS specialist or EPM

If any problems arise, please contact Franz J.G. Zichy at (301)-713-1833


Acting Chief, Engineering Division

EHB-8

Issuance 95-3

7/25/95

EHB-8
Issuance 95- 3
7/25/95

Figure 1

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. GOVERNMENT PRINTING OFFICE: 1993-347-093

WS FORM N-14 (5-92)
EQUIPMENT RETURN TAG
THE SECURITY TO THE ITEM BEING RETURN

1. STATION CALL LETTER IDENTIFIER BGM		2. ORGANIZATION CODE (Station) WP9201		3. TASK NUMBER (NOAA)		4. FAILURE DATE 02/01/95	
5. ITEM NAME LBC		4. NWS STOCK NUMBER		7. ITEM SERIAL NUMBER 87-298		8. CHASSIS S/N	
9. PRIMARY REASON FOR RETURN (Check appropriate blocks)							
01 <input type="checkbox"/> Defective (Returned for repair)		05 <input type="checkbox"/> Instructions from Regional Headquarters		THIS BLOCK FOR HEADQUARTERS USE ONLY			
02 <input type="checkbox"/> Returned for calibration		07 <input type="checkbox"/> Incorrect item received		13. DATE RECEIVED AT NRC			
03 <input type="checkbox"/> Excess stock		08 <input type="checkbox"/> Received defective		14. REPAIRED BY			
04 <input type="checkbox"/> Within warranty		09 <input type="checkbox"/> Damaged in transit		DATE			
05 <input checked="" type="checkbox"/> Instruction from Weather Service Headquarters		10 <input type="checkbox"/> Other (Specify below)		15. QUALITY CONTROL			
11 Failed Diagnostics Yes <input type="checkbox"/> No <input type="checkbox"/>				DATE			
10A. EMRS FAILURE REPORT NO. (A-28 DOCUMENT NO.)		D28603245		16. REMARKS (Surveyed, etc.)			
10B. REPLACEMENT REQUISITION NUMBER				17. DATE RETURNED TO STOCK (NLSC)			
11. DEFECTIVE COMPONENT, DESCRIPTION OF MALFUNCTION OR REASON FOR RETURN Removal of non-ASOS K220 ceilometer at commissioned ASOS site							
12. COMPLETED BY AND TELEPHONE NO.		301-713-1833		18. DATE RECEIVED AT NLSC			

250437

DOCUMENT NO.

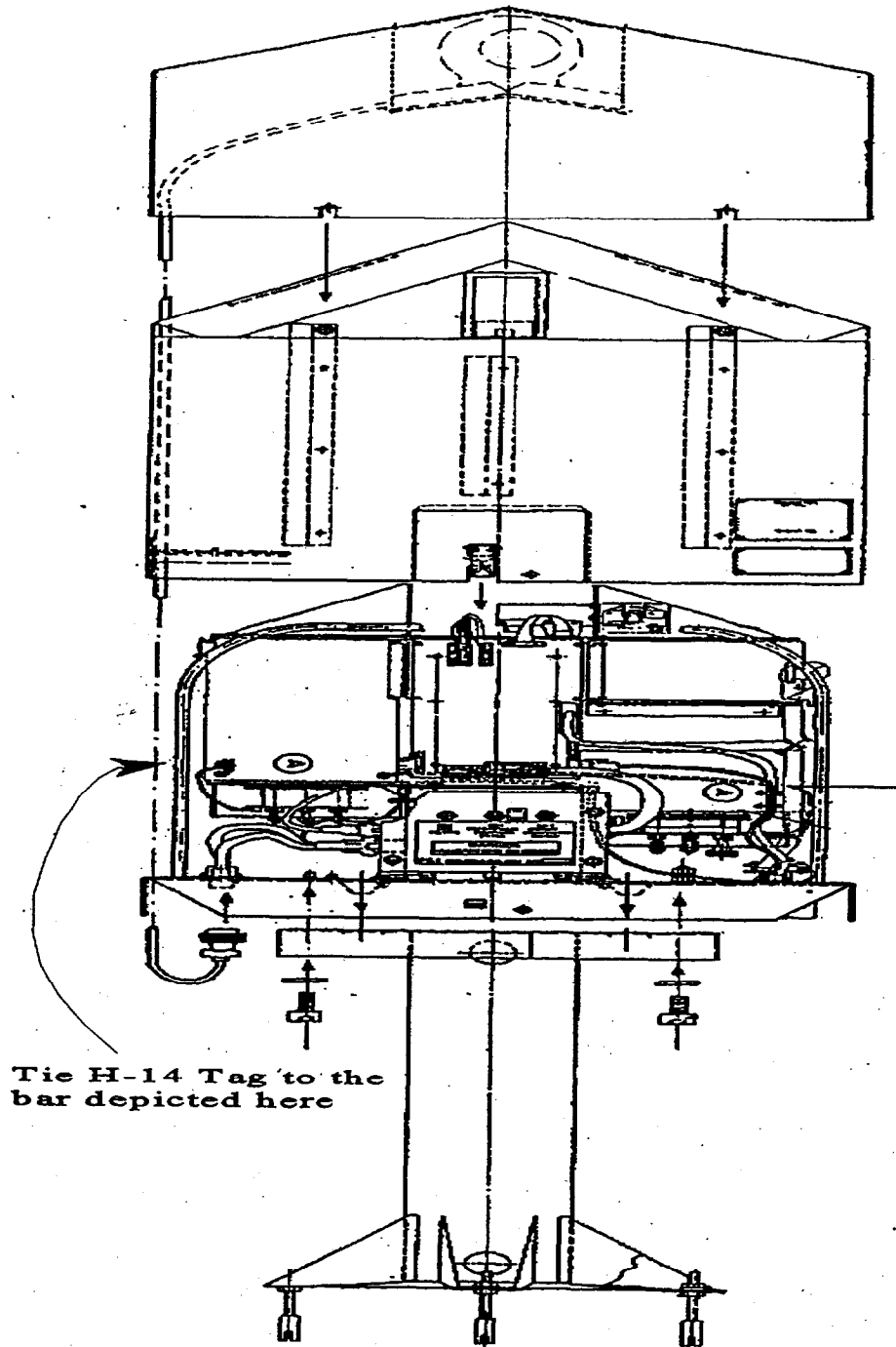


Figure 2

WS FORM A-26 (1/74) <small>Replaces WS Form A-25 and WS Form A-26, which are obsolete.</small>		<small>FOR USE BY THE DEPARTMENT OF COMMERCE NATIONAL BUREAU OF STANDARDS NATIONAL METROLOGY SERVICE</small>		ENGINEERING MANAGEMENT REPORTING SYSTEM MAINTENANCE RECORD		Document Number	
General Information		1. Open Date 02 / 01 / 95	2. Time 0900	3. Initials MRB	3. Response Priority (check one) <input type="radio"/> Immediate <input checked="" type="radio"/> Routine	4. Close Date 02 / 01 / 95	Time 1200
Installation of snow radiation shield							
Equipment Information		6. Station ID BGM	7. Equipment Code LBC	8. Serial Number 87-298	9. TM M	10. AT M	11. How Mt 999
12. EQUIPMENT OPERATIONAL STATUS TIMES		a. Fully Operational <input type="checkbox"/>	b. Logistics Delay <input type="checkbox"/>	c. All Other <input type="checkbox"/>	d. Logistics Delay <input type="checkbox"/>	e. All Other <input type="checkbox"/>	03:00
13. Parts Failure Information							
Block #	ASN	NSN	TM	AT	How Mt	QD	Maint Hrs
1							
2							
3							
4							
5							
14. Work Load Information							
							Type
							a. Routine
							b. Non-routine
							c. Travel
							d. Misc
							e. Overtime
							3:00
							16. Initials
							MRB
15. Miscellaneous Comments							
Removal of non-ASOS K220 Ceilometer at commissioned ASOS site							
Miscellaneous Information		a. Mtd. No. 3	b. Mtd./Act./Disc. Date 02/01/95				
17. SPECIAL PURPOSE REPORTING							
18. CONFIGURATION MGMT. REPORTING (Access Directed)		a. Block #	b. Manufacturer's Part No. of New Part				
		c. Revision No. of New Part					

Figure 3

EHB-8

Issuance 95- 3

7/25/95

U.S. Department of Commerce **Property Transaction Request**

Custodian Code Binghamton, NY	Transaction Request Number
----------------------------------	----------------------------

1. Addition Type: ☐ New Acquisition ☐ Inventory Adjustment ☐ Other _____ Describe _____

DESCRIPTION

Description Number	Description		
Manufacturer	Model Number	Serial Number	
NFC ID Number	Type of Property	Useful Life	

LOCATION

Building Number	Room Number	FIPS (if known)
Street Address		
City	County	State Zip

ACCOUNTING

Document Type (Check One)				
<input type="checkbox"/> 40 Purchase Order	<input type="checkbox"/> 50 Contract	<input type="checkbox"/> 14 Bank Card	<input type="checkbox"/> 22 GSA Fedstrip	<input type="checkbox"/> 43 Leases Rentals
<input type="checkbox"/> Other _____ (Form #)				
Document #	Line Item #	Acquisition Cost	Acquisition Date	Receipt Date
Org. Code / Project Number	Object Class	Org. Code (NFC)	FSC	Possession Code

MULTIPLE ADDS

Multiple Adds (Use this section to record multiple "adds" of the same item procured on the same document.)					
NFC ID	Serial No.	Custodian Code	Bldg No.	Room No.	Project No.

Remarks

Signature of Custodian (Print Name)	Date	Telephone ()
-------------------------------------	------	------------------

See reverse for Change, Transfer or Delete Actions

Form CD-509 (2-91)

Figure 4

E H B - 8
Issuance 95-3
7/25/95

Custodian Code	Transaction Request Number
----------------	----------------------------

2. Change

NFC ID Number	Item to be Changed (Cost, Condition, etc.)	Old Data	New Data

3. Transfer

(PC releasing the property must send this form to the gaining PC for completion & signature)

NFC ID Number	Serial Number	Gaining PC Code #	New Location (Street Address, City, County, State, Zip)
DESCRIPTION			
	Serial # of LBC		Address of site losing LBC

Signature of Gaining PC Name of ET performing the modification	Date Self explanatory	Telephone () Self explanatory
---	--------------------------	-----------------------------------

4. Delete

Types: A.-Abandon / Destroy, B.-Cannabilize, C.-Scrap,
 (Attach supporting documents: D.-Sold, E.-Lost, F.-Stolen G.-Transfer (Other than DOC)
 e.g., Board of Review form)

NFC ID Number	Type (See above)	NFC ID Number	Type (See above)	NFC ID Number	Type (See above)

Signature of Custodian (Print Name)	Date	Telephone ()
-------------------------------------	------	------------------

Figure 5

APPENDIX A

COMMISSIONED ASOS SITES

ABR - Aberdeen, South Dakota
ACT - Waco, Texas
AGS - Augusta, Georgia
AMA - Amarillo, Texas
AST - Astoria, Oregon
BIL - Billings, Montana
BFF - Scottsbluff, Nebraska
BRO - Brownsville, Texas
BTR - Baton Rouge, Louisiana
CNK - Concordia, Kansas
COS - Colorado Springs, Colorado
CRW - Charleston, West Virginia
CSG - Columbus, Georgia
DAB - Daytona Beach, Florida
DDC - Dodge City, Kansas
ELP - El Paso, Texas
FCA - Kalispell, Montana
FLG - Flagstaff, Arizona
FNT - Flint, Michigan
FSM - Fort Smith, Arkansas
GRI - Grand Island, Nebraska
GTF - Great Falls, Montana
HLN - Helena, Montana
HSV - Huntsville, Alabama
ILG - Wilmington, Delaware
JAN - Jackson, Mississippi
LNK - Lincoln, Nebraska
MCN - Macon, Georgia
PBI - West Palm Beach, Florida
PDT - Pendleton, Oregon
PHX - Phoenix, Arizona
PUB - Pueblo, Colorado
PWM - Portland, Maine
SAT - San Antonio, Texas
SDF - Louisville, Kentucky
SPS - Wichita Falls, Texas
SUX - Sioux City, Iowa
SYR - Syracuse, New York
TOP - Topeka, Kansas
TUL - Tulsa, Oklahoma
TUP - Tupelo, Mississippi

Engineering Division
W/OSO321:FJZ

AMENDMENT 1 TO LBC MODIFICATION NOTE 3
(for Electronics Technicians)

GENERAL


This amendment provides additional commissioned Automated Surface Observing System (ASOS) sites, which are selected for deactivation and removal of non-ASOS Laser Beam Ceilometers (LBC).

PROCEDURE

Procedures for the deactivation and removal of non ASOS LBCs are provided in Engineering Handbook (EHB) 8, volume 2, section 3.5, modification note 3. Electronic technicians are reminded to comply with paperwork directives outlined in sections D, E, and F of modification note 3. The information is required in order to maintain system inventory records.

EFFECT ON OTHER INSTRUCTIONS

This issuance supplements LBC modification note 3 in EHB 8, volume 2, section 3.5.


Acting
Chief, Engineering Division

- | | |
|---|---|
| (01) ABE - Allentown, Pennsylvania | (42) RIC - Richmond, Virginia |
| (02) ACY - Atlantic City, New Jersey | (43) RNO - Reno, Nevada |
| (03) ALB - Albany, New York | (44) SGF - Springfield, Missouri |
| (04) ATL - Atlanta, Georgia | (45) SHV - Shreveport, Louisiana |
| (05) BFL - Bakersfield, California | (46) SPI - Springfield, Illinois |
| (06) BPT - Beaumont, Texas | (47) TPA - Tampa, Florida |
| (07) CAE - Columbia, South Carolina | (48) TRI - Bristol, Tennessee |
| (08) CAK - Akron, Ohio | (49) NS - Knoxville, Tennessee |
| (09) CHA - Chattanooga, Tennessee | (50) YNG - Youngstown, Ohio |
| (10) CHS - Charleston, South Carolina | |
| (11) COU - Columbia, Georgia | |
| (12) CVG - Covington, Kentucky | |
| (13) DAY - Dayton, Ohio | |
| (14) DBQ - Dubuque, Iowa | |
| (15) DEN - Denver, Colorado (Old SID: DVX) | |
| (16) DFVV - Dallas/Ft Worth, Texas | |
| (17) DTVV - Detroit, Michigan | |
| (18) ERI - Erie, Pennsylvania | |
| (19) EUG - Eugene, Oregon | |
| (20) FAR - Fargo, North Dakota | |
| (21) GEG - Spokane, Washington | |
| (22) GLD - Goodland, Kansas | |
| (23) GRR - Grand Rapids, Michigan | |
| (24) GSO - Greensboro, North Carolina | |
| (25) ICT - Wichita, Kansas | |
| (26) ILM - Wilmington, North Carolina | |
| (27) IPT - Williamsport, Pennsylvania | |
| (28) LBB - Lubbock, Texas | |
| (29) MCI - Kansas City, Missouri | |
| (30) MEI - Meridian, Mississippi | |
| (31) MGM - Montgomery, Alabama | |
| (32) MKE - Milwaukee, Wisconsin | |
| (33) MLI - Moline, Illinois | |
| (34) OKC - Oklahoma City, Oklahoma | |
| (35) ORH - Worcester, Massachusetts | |
| (36) PAH - Paducah, Kentucky | |
| (37) PDX - Portland, Oregon | |
| (38) PIA - Peoria, Illinois | |
| (39) PVD - Providence, Rhode Island | |
| (40) RAP - Rapid City, South Dakota | |
| (41) RFD - Rockford, Illinois | |

Engineering Division

W/OSO321:FJZ

AMENDMENT 2 TO LBC MODIFICATION NOTE 3
(for Electronics Technicians)

GENERAL

This amendment provides additional commissioned Automated Surface Observing System (ASOS) sites, which are selected for deactivation and removal of non-ASOS Laser Beam Ceilometers (LBC).

PROCEDURE

Procedures for the deactivation and removal of non-ASOS LBCs are provided in Engineering Handbook (EHB) 8, volume 2, section 3.5, Modification Note 3. Electronics technicians are reminded to comply with paperwork directives outlined in sections D, E, and F of Modification Note 3. The information is required in order to maintain system inventory records.

EFFECT ON OTHER INSTRUCTIONS

This issuance supplements LBC Modification Note 3 in EHB-8, volume 2, section 3.5, and amendment 1 to the same modification note.


Acting Chief, Engineering Division

- (01) **BOI** - Boise, Idaho
- (02) **BUF** - Buffalo, New York
- (03) **CAE** - Columbia, South Carolina
- (04) **CLE** - Cleveland, Ohio
- (05) **CRP** - Corpus Christi, Texas
- (06) **DFW** - Dallas/Ft. Worth, Texas
- (07) **DSM** - Des Moines, Iowa
- (08) **IND** - Indianapolis, Indiana
- (09) **LCH** - Lake Charles, Louisiana
- (10) **PHL** - Philadelphia, Pennsylvania
- (11) **SPI** - Springfield, Illinois
- (12) **TOL** - Toledo, Ohio
- (13) **TUS** - Tucson, Arizona

Engineering Division

W/OSO321: FJZ

AMENDMENT 3 TO LBC MODIFICATION NOTE 3
(for Electronics Technicians)

GENERAL

This amendment provides a list of additional commissioned Automated Surface Observing System (ASOS) sites colocated with non-ASOS Laser Beam Ceilometers (LBC). These non-ASOS LBCs are ready for deactivation.

PROCEDURE

Procedures for the deactivation and removal of non-ASOS LBCs are provided in Engineering Handbook (EHB) 8, volume 2, section 3.5, modification note 3. Electronics technicians are reminded to comply with paperwork directives outlined in sections D, E, and F of modification note 3. The information is required in order to maintain system inventory records.

EFFECT ON OTHER INSTRUCTIONS

This issuance supplements LBC modification note 3 in EHB 8, volume 2, section 3.5, and amendment 1 and 2 to the same modification note.


Acting Chief, Engineering Division

(01)	ABQ	Albuquerque, NM
(02)	AHN	Athens, GA
(03)	ALS*	Alamosa, CO
(04)	BGM	Binghamton, NY
(05)	BKW	Beckley, WV
(06)	BLU*	Emigrant Gap, CA
(07)	BNO*	Bums, OR
(08)	BTV	Burlington, VT
(09)	CMH	Columbus, OH
(10)	CON	Concord, NM
(11)	ELP	El Paso, TX
(12)	E W	Evansville, IN
(13)	FLG	Flagstaff, AZ
(14)	HSE*	(8W5) Hatteras, NC
(15)	ILG	Wilmington, DE
(16)	JAX	Jacksonville, FL
(17)	LBF	North Platte, NE
(18)	LEX	Lexington, KY
(19)	MFD	Mansfield, OH
(20)	MOB	Mobile, AL
(21)	OLM	Olympia, WA
(22)	ORD	Chicago, IL
(23)	ORF	Norfolk, VA
(24)	PIH	Pocatello, ID
(25)	RDU	Raleigh/Durham, NC

ALS, BLU, BNO, and HSE are directed to send their non-ASOS LBCs to the NRC.

Engineering Division
W/OSO321: FJZ

AMENDMENT 4 TO LBC MODIFICATION NOTE 3
(for Electronics Technicians)

GENERAL

This amendment provides a list of additional commissioned Automated Surface Observing System (ASOS) sites collocated with non-ASOS Laser Beam Ceilometers (LBC). These non-ASOS LBCs are ready for deactivation.

PROCEDURE

Procedures for the deactivation and removal of non-ASOS LBCs are provided in Engineering Handbook (EHB) 8, volume 2, section 3.5, Modification Note 3. Electronics technicians are reminded to comply with paperwork directives outlined in sections D, E, and F of Modification Note 3. The information is required in order to maintain system inventory records.

EFFECT ON OTHER INSTRUCTIONS

This issuance supplements LBC Modification Note 3 in EHB-8, volume 2, section 3.5, and Amendment 1, 2 and 3 to the same modification note.



Acting Chief, Engineering Division

(01)	APN	Gaylord, MI
(02)	ALO	Des Moines, IA
(03)	CPR	Riverton, WY
(04)	DLH	Binghamton, NY
(05)	FSD	Duluth, MN
(06)	GJT	Sioux Falls, SD
(07)	ISN	Bismarck, ND
(08)	MSN	Milwaukee, WI
(09)	OFK	Omaha, NE
(10)	AVP	Avoca, PA
(11)	BDL	Bradley, CN
(12)	BOS	Boston, MA
(13)	B W I	Baltimore, MD
(14)	GSP	Greer, SC
(15)	SAV	Savannah, GA
(16)	TLH	Tallahassee, FL

Engineering Division
W/OS032 1: FJZ

AMENDMENT 5 TO LBC MODIFICATION NOTE 3
(for Electronics Technicians)

GENERAL

This amendment provides a list of additional commissioned Automated Surface Observing System (ASOS) sites colocated with non-ASOS Laser Beam Ceilometers (LBC). These non-ASOS LBCs are ready for deactivation.

PROCEDURE

Procedures for the deactivation and removal of non ASOS LBCs are provided in Engineering Handbook (EHB) 8, volume 2, section 3.5, Modification Note 3. Electronics technicians are reminded to comply with paperwork directives outlined in sections D, E, and F of Modification Note 3. The information is required in order to maintain system inventory records.

EFFECT ON OTHER INSTRUCTIONS

This issuance supplements LBC Modification Note 3 in EHB 8, volume 2, section 3.5, and amendment 1, 2, 3, and 4 to the same modification note.



Acting Chief, Engineering Division

- (01) **ABI** - Abilene, TX
- (02) **BDR** - Bridgeport, CT
- (03) **BNA** - Nashville, TN
- (04) **EKN** - Elkins, WV
- (05) **EWB** - New Bedford, MA
- (06) **IDA** - Idaho Falls, ID
- (07) **JFK** - New York City, NY
- (08) **LGA** - New York, NY
- (09) **MKG** - Muskegon, MI
- (10) **MSY** - New Orleans, LA
- (11) **PNE** - Philadelphia, PA
- (12) **ROA** - Roanoke, VA

Engineering Division
W/OS0321 : FJZ

AMENDMENT 6 TO LBC MODIFICATION NOTE 3
(for Electronics Technicians)

GENERAL

This amendment provides a list of additional commissioned Automated Surface Observing System (ASOS) sites colocated with non-ASOS laser beam ceilometers (LBC). These non-ASOS LBCs are ready for deactivation.

PROCEDURE

Procedures for the deactivation and removal of non ASOS LBCs are provided in Engineering Handbook (EHB) 8, volume 2, section 3.5, Modification Note 3. Electronics technicians are reminded to comply with paperwork directives outlined in sections D, E, and F of Modification Note 3. The information is required in order to maintain system inventory records.

EFFECT ON OTHER INSTRUCTIONS

This issuance supplements LBC Modification Note 3 in EHB-8, volume 2, section 3.5, and Amendment 1, 2, 3, 4 and 5 to the same modification note.


Acting Chief, Engineering Division

Commissioned ASOS Sites Colocated with non-ASOS LBCS

(01)	AVL	Asheville, NC
(02)	BFL	Bakersfield, CA
(03)	BNA	Nashville, TN
(04)	CID	Cedar Rapids, IA
(05)	CRP	Corpus Christi, TX
(06)	DAB	Daytona Beach, FL
(07)	ESF	Alexandria, LA
(08)	GRB	Greenbay, WI
(09)	IAH	Houston, TX
(10)	LAN	Lansing, MI
(11)	LGB	Long Beach, CA
(12)	MAF	Midland, TX
(13)	MSP	Minneapolis, MN
(14)	OMA	Omaha, NE
(15)	OSH	Oshkosh, WI
(16)	RST	Rochester, MN
(17)	SBN	South Bend, IN
(18)	SJT	San Angelo, TX
(19)	STL	St. Louis, MO
(20)	TUS	Tucson, AZ
(21)	VCT	Victoria, TX
(22)	YKM	Yakima, WA

Engineering Division
W/OSO321:FJZ

AMENDMENT 7 TO LBC MODIFICATION NOTE 3
(for Electronics Technicians)

GENERAL

This amendment provides a list of additional commissioned Automated Surface Observing System (ASOS) sites colocated with non-ASOS laser beam ceilometers (LBC). These non-ASOS LBCs are ready for deactivation.

PROCEDURE

Procedures for the deactivation and removal of non ASOS LBCs are provided in Engineering Handbook (EHB) 8, volume 2, section 3.5, Modification Note 3. Electronics technicians are reminded to comply with paperwork directives outlined in sections D, E, and F of Modification Note 3. The information is required in order to maintain system inventory records.

EFFECT ON OTHER INSTRUCTIONS

This issuance supplements LBC Modification Note 3 in EHB 8, volume 2, section 3.5, and prior amendments 1, 2, 3, 4, 5, and 6 to the same modification note.



John McNulty
Chief, Engineering Division

Commissioned ASOS Sites Colocated with non-ASOS LBCs

(01)	EWR	Newark, NJ
(02)	FWA	Ft. Wayne, IN
(03)	HTS	Hunington, WV
(04)	HUT	Hutchinson, KS
(05)	MCO	Orlando, FL
(06)	MIA	Miami, FL
(07)	MPV	Mount Pelier, VT
(08)	MSO	Missoula, MT
(09)	PIT	Pittsburgh, PA
(10)	PWA	Oklahoma, OK
(11)	ROC	Rochester, NY
(12)	SAN	San Diego, CA
(13)	SMX	Santa Marie, CA
(14)	STP	Saint Paul, MN
(15)	TXK	Texarkana, AR

Engineering Division
W/OS0321:FJZ

AMENDMENT 8 TO LBC MODIFICATION NOTE 3
(for Electronics Technicians)

GENERAL

This amendment provides a list of additional commissioned Automated Surface Observing System (ASOS) sites collocated with non-ASOS laser beam ceilometers (LBC). These non-ASOS LBCs are ready for deactivation.

PROCEDURE

Procedures for the deactivation and removal of non-ASOS LBCs are provided in Engineering Handbook (EHB) 8, volume 2, section 3.5, Modification Note 3. Electronics technicians are reminded to comply with paperwork directives outlined in sections D, E, and F of Modification Note 3. The information is required in order to maintain system inventory records.

EFFECT ON OTHER INSTRUCTIONS

This issuance supplements LBC Modification Note 3 in EHB 8, volume 2, section 3.5, and amendments one through seven to the same modification note.



John McNulty
Chief, Engineering Division

ATTN: MAINT ASSU SECT W/OSO321 * 3*
NOAA NATIONAL WEATHER SERVICE
1325 EAST-WEST HWY
SSMC2 - 3RD FLOOR
SILVER SPRING MD 20910

Commissioned ASOS Sites Collocated with non-ASOS LBCs

- (01) **CSM** - Clinton, OK
- (02) **HON** - Huron, SD
- (03) **HTS** - Huntington, WV
- (04) **INL** - International Falls, MN
- (05) **MSO** - Missoula, MT
- (06) **ROC** - Rochester, NY
- (07) **ROW** - Roswell, NM
- (08) **SCK** - Stockton, CA
- (09) **SEA** - Seattle, WA
- (10) **SFO** - San Francisco, CA

Engineering Division
W/OS0321:FJZ

AMENDMENT 9 TO LBC MODIFICATION NOTE 3
(for Electronics Technicians)

GENERAL

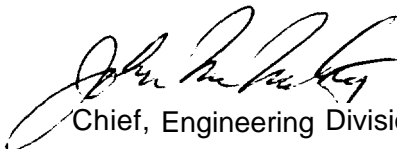
This amendment provides a list of additional commissioned Automated Surface Observing System (ASOS) sites collocated with non-ASOS laser beam ceilometers (LBC). These non-ASOS LBCs are ready for deactivation.

PROCEDURE

Procedures for the deactivation and removal of non-ASOS LBCs are provided in Engineering Handbook No. 8 (EHB-8), volume 2, section 3.5, Modification Note 3. Electronics technicians are reminded to comply with paperwork directives outlined in sections D, E, and F of Modification Note 3. The information is required in order to maintain system inventory records.

EFFECT ON OTHER INSTRUCTIONS

This issuance supplements LBC Modification Note 3 in EHB 8, volume 2, section 3.5, and amendments one through eight to the same modification note.



Chief, Engineering Division

Commissioned ASOS Sites Collocated with non-ASOS LBCs

(01)	ABI	Abilene, TX
(02)	BRL	Burlington, IA
(03)	BTL	Battle Creek, MI
(04)	MWH	Moses Lake, WA
(05)	RDD	Redding, CA
(06)	SAV	Savannah, GA
(07)	SCK	Stockton, CA
(08)	SHR	Sheridan, WY
(10)	TLH	Tallahassee, FL

Engineering Division
W/OSO321:FJZ

AMENDMENT 11 TO LBC MODIFICATION NOTE 3
(for Electronics Technicians)

GENERAL

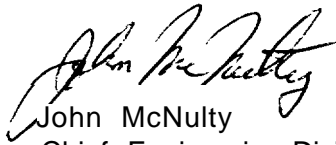
This amendment provides a list of additional commissioned Automated Surface Observing System (ASOS) sites collocated with non-ASOS laser beam ceilometers (LBC). These non-ASOS LBCs are ready for deactivation.

PROCEDURE

Procedures for the deactivation and removal of non ASOS LBCs are provided in Engineering Handbook No. 8 (EHB-8), volume 2, section 3.5, Modification Note 3. Electronics technicians are reminded to comply with paperwork directives outlined in sections D, E, and F of Modification Note 3. The information is required in order to maintain system inventory records.

EFFECT ON OTHER INSTRUCTIONS

This issuance supplements LBC Modification Note 3 in EHB 8, volume 2, section 3.5, and amendments one through ten to the same modification note.



John McNulty
Chief, Engineering Division

Commissioned ASOS Sites Collocated with Non-ASOS LBCs

- (01) **CMI** - Champaign, IL
- (02) **DPA** - Dupage, IL
- (03) **DTN** - Shreveport, LA
- (04) **LAX** - Los Angeles, CA
- (05) **MDN** - Chicago, IL
- (06) **RDD** - Redding, CA

Engineering Division
W/OSO321:FJZ

AMENDMENT 12 TO LBC MODIFICATION NOTE 3
(for Electronics Technicians)

GENERAL


This amendment provides a list of additional commissioned Automated Surface Observing System (ASOS) sites collocated with non-ASOS laser beam ceilometers (LBC). These non-ASOS LBCs are ready for deactivation.

PROCEDURE

Procedures for the deactivation and removal of non*ASOS LBCs are provided in Engineering Handbook No. 8 (EHB-8) volume 2, section 3.5, Modification Note 3. Electronics technicians are reminded to comply with paperwork directives outlined in sections D, E, and F of Modification Note 3. The information is required in order to maintain system inventory records.

EFFECT ON OTHER INSTRUCTIONS

This issuance supplements LBC Modification Note 3 in EHB 8, volume 2, section 3.5, and amendments one through 11 to the same modification note.



John McNulty
Chief, Engineering Division

Commissioned ASOS Sites Collocated with Non-ASOS LBCs

- (1) **ACK** - Nantucket, MA
- (2) **BFF** - Scottsbluff, NE
- (3) **EWN** - New Bern, NC
- (4) **IAD** - Washington Dulles, DC
- (5) **MIC** - Minneapolis, MN
- (6) **RBD** - Fort Worth, TX
- (7) **RVS** - Tulsa, OK

<i>Issue Date</i>	<i>Org. Code</i>
3-3-92	W/OS032

NATIONAL WEATHER SERVICE

Engineering Handbook

<i>Program</i>	<i>Part</i>	<i>Section</i>
EHB-8	03	3.6

MODIFICATION NOTE INDEX - COOPERATIVE PROGRAM EQUIPMENT

<u>Number</u>	<u>Date of Issue</u>	<u>Title</u>
1	November 25, 1987	C450 Interim Lightning Modification
2	May 22, 1989	Modification to the Metal Funnel Cap on the 8-Inch Non-Recording Rain Gauge for Use With the Plastic Measuring Tube.

C450 MODIFICATION NOTE 1
(for Cooperative Program Managers)

SUBJECT	:	C450 Interim Lightning Modification
PURPOSE	:	To reduce the damage caused by lightning
EQUIPMENT AFFECTED	:	All C450 systems
PARTS REQUIRED	:	None
MOD PROCUREMENT	:	None
SPECIAL TOOLS AND TEST EQUIPMENT REQUIRED	:	Phillips screwdriver Wire cutters
TIME REQUIRED	:	Less than 1 hour
EFFECT ON OTHER INSTRUCTIONS	:	None
CERTIFICATION STATEMENT	:	This modification was successfully tested at the Equipment Test and Evaluation Branch in Sterling, Virginia.

General

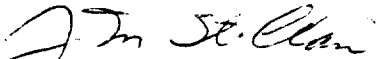
This interim modification involves the removal of a wire inside of the display unit. This will reduce damage due to lightning.

At a later date, a lightning protector will be supplied. Preliminary testing of a lightning protector has been completed.

Further testing and research are being done to provide the best protection

Procedure

1. Remove power from the display unit by placing the ON/OFF switch on the rear panel to the OFF position.
2. Unplug the display unit from the wall outlet, and unplug the sensor cable from the rear of the display unit.
3. Remove the two Phillips head screws which hold the display unit case together. Place the display unit upright and remove the top half of the case.
4. Reference figure 1. With the front of the unit facing you, locate three wires that connect the printed circuit board to the sensor cable connector. Locate the wire that connects pin 2 of the connector to the area of the printed circuit board between the capacitors C5 and C9. This wire is usually black in color.
5. Using wire cutters, carefully clip the identified wire at the connector (pin 2) and at the board (between capacitors C5 and C9) and discard the wire.
6. Reassemble unit and place into operation by reversing steps 1 through 3.
7. Report the serial numbers of the units modified to the regional CPM, who will report to the national CPM. It is important to report the serial numbers so the program can be assured that all units have been modified.



J. Michael St. Clair
Chief, Engineering Division

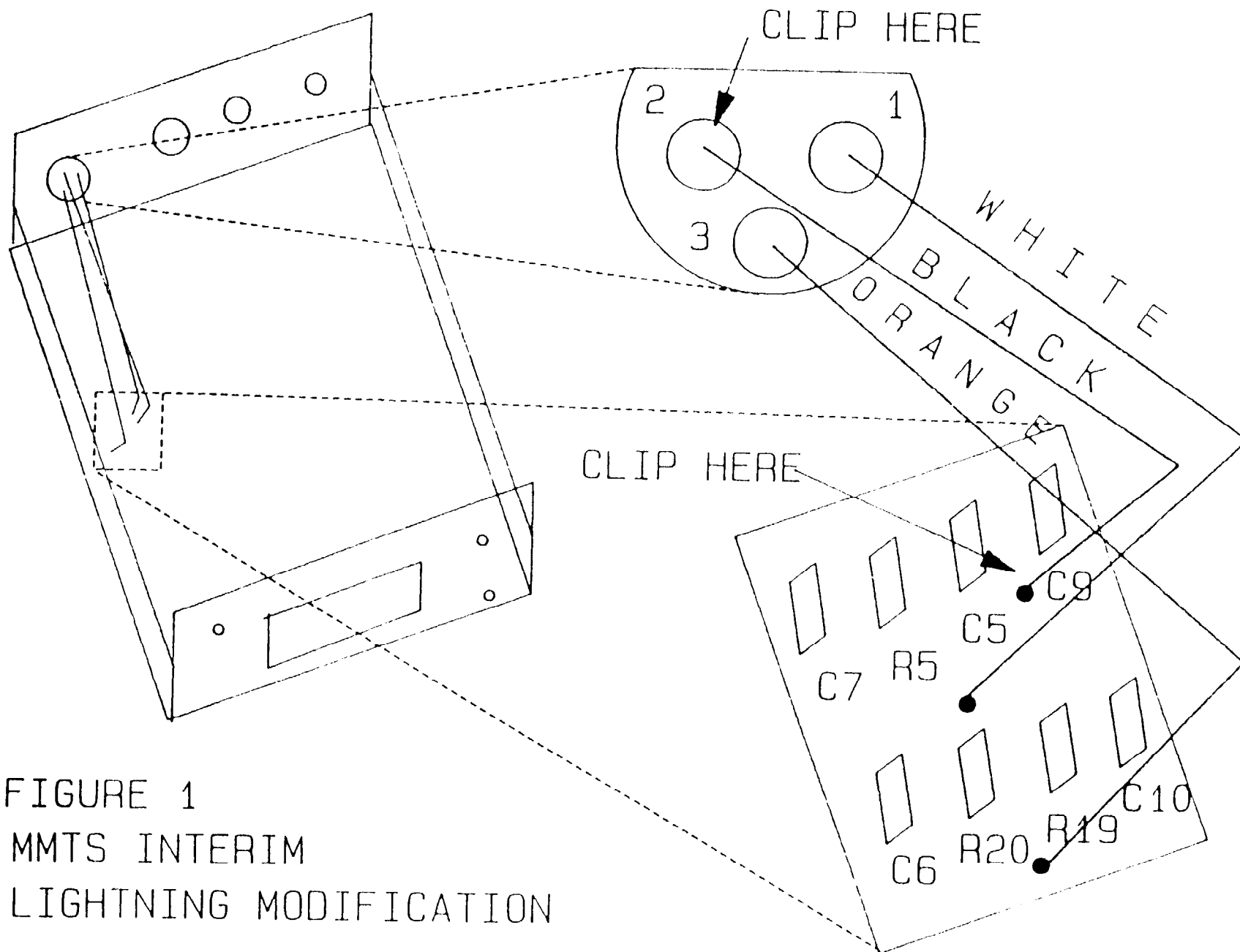


FIGURE 1
MMTS INTERIM
LIGHTNING MODIFICATION

Engineering Division
W/OSO321: BGM

HYDROLOGIC GAUGING MODIFICATION NOTE 2
(for Cooperative Program Managers)

SUBJECT	:	Modification to the Metal Funnel Cap on the 8-Inch Nonrecording Rain Gauge for Use With the Plastic Measuring Tube
PURPOSE	:	Enable the plastic measuring tube to be used with the metal funnel cap.
EQUIPMENT AFFECTED	:	All 8-inch nonrecording rain gauges that use a metal funnel cap with the plastic measuring tube.
PARTS REQUIRED	:	None
MOD PROCUREMENT	:	None
SPECIAL TOOLS REQUIRED	:	None
TEST EQUIPMENT REQUIRED	:	None
TIME REQUIRED	:	1 hour
EFFECT ON OTHER INSTRUCTIONS	:	None
CERTIFICATION STATEMENT	:	This modification was successfully tested for operational integrity at National Weather Service Headquarters by the Engineering Division.

General

The 8-inch nonrecording rain gauge has recently been redesigned to make it simpler for manufacturers to fabricate. All parts of the new gauge are interchangeable with the old copper gauge (often painted silver) except for the new plastic measuring tube. Should it be necessary to use the plastic measuring tube with the copper funnel cap, this modification to the cap must be invoked.

NOAA NATIONAL WEATHER SERVICE
CHIEF, MAINT., LOGISTICS & FAC. BR.
GRAMAX
RM. 326
W/OSO32
SILVER SPRING

MD 29010

EHB-8
Issuance 89-3
5-22-89

Procedure

1. Remove the copper funnel cap from the 8-inch nonrecording rain gauge.
2. Divide the opening where the measuring tube goes into the funnel cap into four equal sections. Drill four 1/4-inch holes above the stiffening ring as shown in figure 1. This allows the water to overflow from the measuring tube into the can.
3. Cut the measuring tube opening of the funnel cap in four places using a hacksaw (refer to figure 1). The cuts should be straight and stop just below the stiffening ring on the funnel cap. Do not cut through the stiffening ring.
4. It may be necessary to pull the sections made on the funnel cap slightly open to accommodate the plastic measuring tube. The plastic measuring tube should fit flush against the stiffening ring when installed on the funnel cap.
5. This concludes this modification. Restore gauge for operational use.

Reporting Modification to WSH Engineering Division

Report the number of units modified to the regional Cooperative Program Manager (CPM) who will report to the national CPM.



J. Michael St. Clair
Chief, Engineering Division

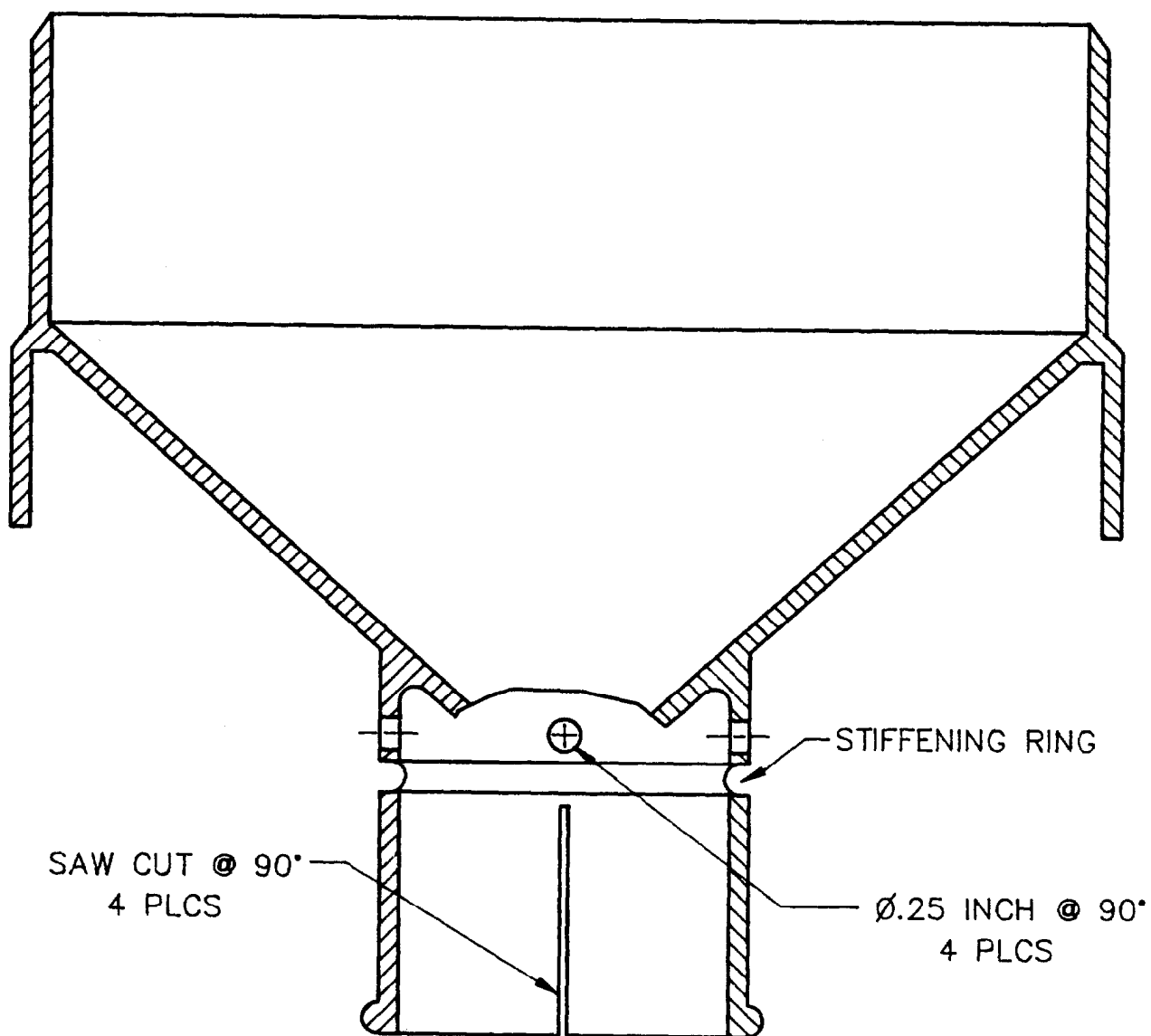


FIGURE 1
FUNNEL CAP